



**MILWAUKEE COUNTY**  
**AUTOMATED MAPPING AND**  
**LAND INFORMATION SYSTEM**

c/o Southeastern Wisconsin  
Regional Planning Commission  
W239 N1812 Rockwood Drive  
PO Box 1607  
Waukesha, Wisconsin 53187-1607

**MEMORANDUM**

**TO:** MCAMLIS Steering Committee Members, Alternates, and Interested Parties  
**FROM:** Thomas D. Patterson, MCAMLIS Project Manager  
**DATE:** October 15, 2004  
**SUBJECT: RESCHEDULE OF THE MCAMLIS STEERING COMMITTEE MEETING**

In order to accommodate the schedules of several MCAMLIS Steering Committee members and in order to assure that a quorum is present for the next Steering Committee meeting, the Steering Committee meeting that had been scheduled for October 19, 2004 is being rescheduled to November 2, 2004.

Should you have any question in this regard, please do not hesitate to contact me at 262-547-6721.

\* \* \* \* \*

#100625 V1 - MCAMLIS - Reschedule Mtg.

Calendar Entry:

## Meeting

Subject:	#100625 v1 - MCAMLIS - Reschedule Mtg. [Virus checked] ['Watchdog': checked]	Location:	Courthouse room 203p
Begins:	Tue 11/02/2004 09:00 AM	Entry type:	Meeting
Ends:	Tue 11/02/2004 11:30 AM		
Chair:	Greg High/DPW/Milwaukee County		

### Invitations already sent

To: Gary Drent/DPW/Milwaukee County@milwco, Kevin White/DPW/Milwaukee County@milwco  
cc:

- ☐ Pencil In
- ☐ Mark Private
- ☐ Notify me

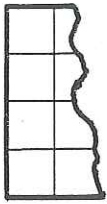
Categorize:

Time will appear free to others.  
Others cannot see any details about this event.  
Have Notes notify you before the event.

Description:

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RECEIVED  
MILWAUKEE COUNTY

OCT 28 2004

MEMORANDUM

DEPT. PUBLIC WORKS  
AE AND ES DIVISION

TO: MCAMLIS STEERING COMMITTEE MEMBERS, ALTERNATES, AND  
INTERESTED PARTIES

FROM: Thomas D. Patterson, MCAMLIS Project Manager

DATE: October 27, 2004

SUBJECT: ITEMS FOR REVIEW FOR THE NOVEMBER 2, 2004, STEERING  
COMMITTEE MEETING

Enclosed herewith please find items for your review prior to the November 2, 2004, Steering Committee meeting. Additional items for your review and a meeting agenda will be mailed to you shortly.

\* \* \*

TDP/lw  
#101093 v1 - Review Items MCAMLIS 11/2/04 Meeting

**DRAFT FOR REVIEW**

**MINUTES OF THE THIRD MEETING**

**Milwaukee County Automated Mapping and Land Information System  
Subcommittee on Topographic Mapping**

DATE: Thursday, October 19, 2004

TIME: 2:00 P.M.

PLACE: Milwaukee County - City Campus  
Room 219  
2711 W. Wells Street  
Milwaukee, Wisconsin

Members Present

Timothy R. Bate, P.E., Chairman	Engineering Planning Manager, Milwaukee Metropolitan Sewerage District, and President, Wisconsin Section, American Society of Civil Engineers
Gregory G. High	Director, Architectural and Engineering Services, Milwaukee County Department of Parks and Public Infrastructure
William C. Shaw	Manager, Geographic Information Systems, WE Energies
Timothy J. Thur, P.E.	Chief Sewer Design Manager, Environmental Engineering Division, City of Milwaukee
Thomas J. Tym	Head, Technology Services Department, Ruekert & Mielke, Inc.
Richard S. Vraga	Liaison for Wisconsin and Illinois, U.S. Geological Survey

Members Absent

Alyssa A. Bails, AICP	GIS Division Manager, R.A. Smith & Associates, Inc.
Mr. Rick Norris, P.E.	President, Norris and Associates, Inc.

Guests and Staff Present

Robert P. Biebel	Chief Environmental Planner, SEWRPC
Thomas D. Patterson	MCAMLIS Project Manager
Kevin R. White	GIS Supervisor, Architectural and Engineering Services, Milwaukee County Department of Parks and Public Infrastructure

**ROLL CALL**

The third meeting of the Milwaukee County Automated Mapping and Land Information System (MCAMLIS) Subcommittee on Topographic Mapping was called to order by Chairman Bate at 2:05 p.m. Roll call was taken by circulating an attendance signature sheet and a quorum was declared present. In view of the fact that a number of new individuals were present for this meeting, Chairman Bate asked that each person present introduce himself for the benefit of other attendees.



## **CONSIDERATION OF THE MINUTES OF THE SECOND SUBCOMMITTEE MEETING HELD ON SEPTEMBER 2, 2004**

Mr. Patterson noted that copies of the Minutes of the second meeting of the Subcommittee held on September 2, 2004, had been distributed to all members of the Subcommittee for review prior to the meeting and asked that the Committee consider those minutes.

There being no questions, comments, or corrections, on a motion by Mr. High seconded by Mr. Shaw and carried unanimously, the minutes of the meeting of September 2, 2004, were approved as published.

## **REVIEW OF THE SUBCOMMITTEE REPORT CONCERNING THE MCAMLIS DIGITAL TOPOGRAPHIC REPLACEMENT MAPPING PROGRAM**

Mr. Patterson noted that copies of the Subcommittee Report to the MCAMLIS Steering Committee, dated September 3, 2004, had been distributed to all members of the Subcommittee for review prior to the meeting. Following a short discussion, it was the consensus of the members that the report successfully captured the salient features of the Subcommittee discussion and correctly conveyed the Subcommittee's recommendations to the Steering Committee.

Mr. Patterson reported that following the submittal of the Subcommittee's report to the MCAMLIS Steering Committee at its meeting held on September 14, 2004, the Steering Committee had considered those recommendations made by the Subcommittee of issues that, in the Subcommittee's view, required additional evaluation. More specifically these issues were:

1. Whether or not the digital point, line, and area features contained in the proposed project specifications should continue to be mapped as interpreted, symbolized, and annotated features in light of the possible incorporation of a digital orthophotography layer into the digital topographic map replacement program.
2. Whether or not the requirement in the proposed specifications that delivery of the digital map products from the contractor in Integraph/MicroStation DGN format should be continued in view of emerging computer software environments incorporating geodatabases.
3. An evaluation of the useful life of the topographic mapping such that a suitable map replacement cycle could be determined and recommended to the Steering Committee for use in formulating future MCAMLIS annual work programs.

Mr. Patterson further stated that following Steering Committee discussion of these three points, the Steering Committee had asked the Chairman to augment the membership of the Subcommittee with several additional individuals having "hands-on" experience in the use of the MCAMLIS digital topographic maps in municipal planning and engineering applications and to reconvene the Subcommittee to give additional consideration to these three issues.

## **REVIEW AND DISCUSSION OF THE PROPOSED SPECIFICATIONS FOR MCAMLIS DIGITAL TOPOGRAPHIC MAPPING**

Mr. Patterson noted that copies of the Proposed Detailed Specifications for MCAMLIS Digital Topographic Mapping had been distributed to all members of the Subcommittee for review prior to the meeting.

[Project Manager's Note: A copy of these specifications is attached to the Minutes of the Second Meeting of the Subcommittee.]

Mr. Patterson further called the Subcommittee's attention to several plotted copies of MCAMLIS digital topographic maps provided for review at this meeting and spent several minutes reviewing the layout and content of these maps and summarized briefly some of the uses to which the maps are put, including as a particularly relevant example, the use of the topographic maps as base maps for the current MCAMLIS floodland mapping projects.

### **Evaluation of the Currently Specified Digital Point, Line, and Area Features**

Mr. Patterson then proceeded to review the MCAMLIS digital topographic mapping specifications with the Subcommittee. Subcommittee discussion concerning the mapped point, line, and feature specifications was extensive. During that discussion several particularly germane points were made.

Mr. Tym noted that he had met with staffs of the Cities of Greenfield, Wauwatosa, and West Allis, and the Village of Brown Deer to discuss the manner in which these maps were typically used by those municipalities. Mr. Tym had summarized the results of his meetings in a table which he distributed to the Subcommittee (copy of Mr. Tym's table attached to these Minutes). Mr. Tym noted in particular that these municipalities were interested in the continued availability of such previously mapped features as pavement edges and structures and in the continued production and availability of map feature annotation (that is, the names of streets, rivers and streams, and ponded or open water features). Mr. Tym further reported that the City of West Allis staff had indicated that they would prefer to continue to work in a quarter-section oriented map environment rather than in a continuous map file organizational structure.

Mr. Patterson responded to Mr. Tym's comment concerning quarter-section map organization by noting that the existing map sheet layout elements could be easily reused with updated digital topographic mapping files and that by "cutting out" the new map content from a continuous map coverage any user could continue to produce "quarter-section" maps.

Mr. Tym further noted that all four municipalities with which he had met had made the observation that the currently available digital topographic maps are "seriously" out of date, a point with which Mr. White concurred.

Mr. Biebel stated that with respect to floodplain mapping in particular, his professional experience indicated that symbolized and annotated contour lines and hydrography features were much easier for planners and engineers to use for environmental planning and engineering purposes. Mr. Biebel also distributed a table to the Subcommittee members; this table highlighting those interpreted, symbolized, and annotated features, particularly hydrography and hypsometry, that he believed to be especially helpful for environmental engineering and planning tasks (a copy of Mr. Biebel's table is attached to these minutes). Mr. Biebel noted in particular the recent experience of Regional Planning Commission staff in using digital map data obtained from Waukesha County in which contour lines were neither symbolized



nor annotated; that is, the contour lines exist only as unsymbolized lines developed from a digital terrain model. The lack of such symbolization and annotation had made this material moderately more time consuming to use.

Mr. White and Mr. Shaw also indicated that symbolized and annotated elevation data and hydrography were important to the work of their respective organizations.

Mr. Biebel further noted that under newly emerging regulations, it would soon be necessary for local municipalities to review and possibly update stormwater discharge quantities within their municipal boundaries on an annual basis and that easy-to-use hypsometric information would become increasingly valuable in that particular regard.

Mr. Tym noted that his company had also experienced the need for additional staff efforts required by the use of more recently mapped digital map information acquired from Waukesha County for use by his company for municipal planning and engineering purposes. In response to a question from Mr. Patterson, Mr. Tym stated that, in his professional opinion, Waukesha County municipalities had erred by cutting back so severely on the use of interpreted and symbolized planimetric features in their mapping.

Mr. Vraga stated that from the perspective of the National Map program, the presence of an orthoimagery layer was deemed important and that he was pleased that the revised specification for the MCAMLIS digital topographic mapping would include such a layer. Mr. Vraga further stated that within the National Map construct, the Federal government was planning to "update" planimetric features in the National Map ideally using feature information compiled by counties and municipalities.

Mr. Patterson noted that the Regional Planning Commission under its comprehensive, areawide planning program obtains large scale, controlled, digital orthophotography every five years. Currently this photography is acquired to be compatible with maps prepared to meet National Map Accuracy standards at a scale of 1:2400, or 1 inch equals 200 feet. He further suggested that Milwaukee County could request the Commission to acquire this orthophotography for Milwaukee County at a scale of 1 inch equals 100 feet, thereby rendering it compatible with the MCAMLIS topographic and cadastral maps. The MCAMLIS Steering Committee would be responsible for the "incremental" costs associated with the scale increase under such a scenario, however.

In response to a question from Mr. Patterson, Mr. Vraga stated that, within the context of the evolving Federal mapping programs, the National Map was presumed to include all interpreted, symbolized, and annotated features previously shown as interpreted, symbolized, and annotated features on the US Geological Survey 1:24,000 map series. This would include, but not necessarily be limited to: contour lines; structures; complete hydrography; and the street and highway network.

Mr. Shaw asked Mr. Vraga about the manner in which the homeland security issue affects the importance that the Federal government places on various digital mapping features. Mr. Vraga responded that orthoimagery, hypsometry, structure outlines, and the transportation network—highway, rail, and water—were deemed to be especially important in this regard. Mr. Vraga further noted that the National Mapping Administration within the Federal government was currently exploring the feasibility of procedures whereby those elements deemed critical to homeland security, including digital orthophotography, were updated no less frequently than once every two years.



At the conclusion of an extensive discussion of this particular issue, and following a line by line review of the point, line and area features contained in the proposed specifications, the Subcommittee identified the following planimetric map features for possible removal from the specifications:

1. Recreational trail line and associated text;
2. Power, telephone and pole locations;
3. Railway signals;
4. Signs, including billboards and associated text; and
5. Miscellaneous planimetric features and associated text (these features occur rarely, are often ephemeral, and include such features as spoil piles and salt and coal storage piles).

#### **Delivery of the MCAMLIS Digital Map Products in Intergraph/MicroStation DGN Format**

The Subcommittee quickly reached consensus concerning the continued use of the Intergraph/MicroStation DGN format for delivery of MCAMLIS digital map products. In supporting this recommendation to the Steering Committee, Mr. Tym noted that, in municipal environments, the predominant use of MCAMLIS digital topographic mapping was for computer assisted drafting (CAD) applications. Because of this, Mr. Tym indicated that municipalities with which he had spoken would prefer to see the use of a CAD compatible delivery format continued.

Mr. Shaw noted that GIS softwares such as ESRI ArcInfo had the ability to read the Intergraph/MicroStation DGN format with relative ease as did alternative CAD softwares such as AutoCAD.

Mr. Patterson noted that the choice of the DGN format had originally been made for contractor convenience and further noted that it was his observation that the DGN format continued to be a cost effective delivery format for the MCAMLIS digital map products. He speculated that based upon experience at the Regional Planning Commission, requiring delivery in alternative formats would either increase the cost of acquiring the digital map products, increase the complexity of dealing with alternative formats in a multiple use environment such as the MCAMLIS program, or both.

It was the consensus of the Subcommittee that the Intergraph/MicroStation DGN format should be retained within the MCAMLIS specifications.

#### **Determination of a Suitable Digital Topographic Map Replacement Cycle**

The Subcommittee, after considerable discussion of a suitable digital topographic map replacement cycle, agreed that these maps should not be allowed to become more than 10 years out of date. Pertinent issues raised during this discussion were as follows.

Mr. Shaw questioned whether or not it might be possible to incorporate newer material into existing digital topographic maps by obtaining updated material from sources other than aerial photography. Mr. Tym noted in this regard that the cities of Greenfield and West Allis currently record razed structures and that some of the municipalities within Milwaukee County also collect plats of survey showing the foundations of new structures as they are erected. The accuracy of the latter data, it was noted, was problematic; and importantly any incorporation of ad hoc data would lack needed uniformity.

Mr. Shaw stated his position that a cost/benefit analysis of a change cycle needed to be undertaken in order to truly answer the question of a proper map update frequency. He further stated that lacking such an analysis and understanding would mean that 5 to 10 years after completing a countywide digital topographic map replacement program, MCAMLIS Steering Committee would then again be confronted with the need to undertake another countywide digital topographic map replacement project. Mr. Shaw



stated that he believed it was quite important to identify the number of desirable years in a replacement cycle and to establish a continuous map update cycle within the MCAMLIS program.

Mr. Bate suggested that the municipalities might be willing to work cooperatively with the County whereby municipalities would "trade" municipal-wide planimetric map feature updates if the County would agree to provide regular digital orthophotography updates. Several Subcommittee members noted in this regard, however, that in order for such a program to be useful beyond the municipal level, agreement would need to be secured on a uniform planimetric feature list. Securing such an agreement could be expected to be more problematic based upon previous efforts to secure agreement on past cooperative digital mapping efforts.

#### **FORMULATION OF THE SUBCOMMITTEE RECOMMENDATIONS TO THE MCAMLIS STEERING COMMITTEE**

At the conclusion of the Subcommittee's deliberations concerning the observations and recommendations that the Subcommittee wished to present to the Steering Committee, Mr. Patterson stated that he would complete a report to the Steering Committee based upon the Subcommittee's discussion and distribute that report to the Steering Committee in time for the report's consideration at the next Steering Committee meeting scheduled for November 2, 2004.

#### **ADJOURNMENT**

There being no further business to come before the Subcommittee, on a motion by Mr. High seconded by Mr. Shaw and carried unanimously, the meeting was adjourned at 4:35 p.m.

Respectfully submitted,

Thomas D. Patterson  
MCAMLIS Project Manager

MCAMLIS Topo Mapping - Municipal Feedback

Item	West Allis	Greenfield	Wauwatosa	Brown Deer
Currently updating:	Curbs & Bldgs	Curbs, bldgs, driveways, walks, sheds, retention ponds, & wooded areas	Bldgs	Bldgs (Res/Comm), parking lots, driveways, streets & sidewalks
Desired Geographic Format	1/4 section format w/o adjacent data	Seamless or Township w/o adjacent data	Seamless	Seamless
Most commonly used features	Curbs & Road edges	Curbs, driveways & walks	All	All
	Bldg outlines	Bldgs & sheds		
	Walks	Ponds		
	Poles	Wooded Areas		
Software Platform	Microstation / Intergraph	Microstation	AutoCAD	AutoCAD or .dxf
Symbology, Layers, Colors, etc.	Keep the same	Keep the same	Keep the same	Keep the same
Frequency	More often	More often	More often	
Comments	Includes razing of bldgs and CIP	Include contours in City of Milw datum	Razed bldgs moved to different layer	
	Seamless topos may be too large	MCAMLIS should be repository for all topo updates		

Mr. Tym's Table

Mr. Biebel's Table

Table 2

MILWAUKEE COUNTY TOPOGRAPHIC MAPPING ELEMENTS  
1" = 100' SCALE

MICROSTATION DGN FORMAT FILES

<u>Data Element Group/Elements</u>	<u>Type</u>	<u>Level</u>	<u>Color</u>	<u>Notes</u>
<b><u>Map Sheet Elements</u></b>				
Map Border	Line	1	1	Border, Trim Lines
Map Title	Text	1	2	
Map Legend Box	Line	1	3	Map Logo
Map Legend Box Text	Text	1	4	
Graphic Scale	Line	1	5	
Graphic Scale Text	Text	1	6	
North Point	Point	1	7	
North Point Text	Text	1	8	
Map Legend Symbols	Point	1	9	
Map Legend Text	Text	1	10	
Map Index Section Lines	Line	1	11	
Map Index County and Town Lines	Line	1	13	
Map Index City Boundary Lines	Line	1	15	
Map Index Location Box	Line	1	17	
<b><u>Geodetic and Geographic Reference Elements</u></b>				
NGS Triangulation Station Location	Point	2	1	See Note (1)
NGS Triangulation Station Text	Text	2	2	See Note (1)
Traverse Station Location	Point	2	3	See Note (1)
Traverse Station Text	Text	2	4	See Note (1)
Photo Center Location	Point	2	5	See Note (1)
Photo Center Text	Text	2	6	See Note (1)
Bench Mark Location	Point	2	7	See Note (1)
Bench Mark Text	Text	2	8	See Note (1)
Wisconsin State Plane Coordinate Grid Intervals	Point	3	1	See Note (2)
Wisconsin State Plane Coordinate Text	Text	3	2	See Note (2)
Wisconsin State Plane Coordinate Grid Intersections	Point	3	3	See Note (1)
U. S. Public Land Survey Corner	Point	4	1	
U. S. Public Land Survey Corner Coordinates	Text	4	2	



<u>Data Element Group/Elements</u>	<u>Type</u>	<u>Level</u>	<u>Color</u>	<u>Notes</u>
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**Geodetic and Geographic Reference Elements (continued)**

U. S. Public Land Survey Monuments	Point	4	3	
U. S. Public Land Survey Monument Coordinates	Text	4	4	
U. S. Public Land Survey Section Line	Line	5	1	
Clipped Section Line Segment	Line	5	5	
U. S. Public Land Survey Section Bearing/Length	Text	5	2	
U. S. Public Land Survey Quarter-Section Line	Line	5	3	
Clipped Quarter-Section Line Segment	Line	5	7	
U. S. Public Land Survey Quarter-Section Bearing/Length	Text	5	4	

**Hydrographic Elements**

Open Water Line	Line	8	1	See Note (3)
Open Water Name Text	Text	8	2	See Note (3)
Open Water Direction Of Flow	Point	8	3	
Single Width Water Line	Line	9	1	See Note (4)
Single Width Water Name Text	Text	9	2	See Note (4)
Marsh Boundary Line	Line	10	1	
Marsh Name Text	Text	10	2	
Marsh Symbol	Point	10	3	

**Planimetric Elements**

Road Pavement/Curb Line	Line	11	1	
Road Name Text	Text	11	2	
Road Median/Boulevard Line	Line	11	3	
Clipped Paved Road Line Segment	Line	11	5	
Private Road Pavement/Curb Line	Line	12	1	
Unimproved Road Line	Line	13	1	
Unimproved Road Name Text	Text	13	2	
Clipped Unimproved Road Line Segment	Line	13	3	
Driveway Line (paved)	Line	14	1	
Driveway & Parking Text	Text	14	2	
Driveway (unpaved)	Line	14	3	
Parking (paved)	Line	14	5	
Parking (unpaved)	Line	14	7	
Trail Line	Line	15	1	
Trail Line Text	Text	15	2	



<u>Data Element Group/Elements</u>	<u>Type</u>	<u>Level</u>	<u>Color</u>	<u>Notes</u>
<b><u>Planimetric Elements (continued)</u></b>				
Walk Line	Line	16	1	
Walk Line Text	Text	16	2	
Fence Line	Line	17	1	
Pole and Tower Footing	Point	18	1	
Transmission Tower	Line	18	3	Multi-legged Tower
Communications Tower	Line	18	5	Other Large Towers
Power/Telephone Pole Location	Point	19	1	Standard Wood/
Light Pole Location	Point	19	3	Metal/Concrete
Railway Track Centerline	Line	20	1	
Railway Name Text	Text	20	4	
Railway Signal	Point	20	5	
Railway (abandoned)	Line	20	7	
Building Roof/Foundation Outline	Line	21	1	
Building Name Text	Text	21	2	
Ruins Foundation Outline	Line	22	1	
Ruins Name Text	Text	22	2	
Dam Line	Line	23	1	
Dam Name Text	Text	23	2	
Pier Line	Line	23	3	
Pier Name Text	Text	23	4	
Dock Wall Line	Line	23	5	
Dock Wall Name Text	Text	23	6	
Culvert (small)	Point	24	1	
Culvert Line (large)	Line	24	3	
Bridge Deck Line	Line	25	1	
Bridge Wing/Retaining Wall Line	Line	25	3	
Aviation Runway/Taxiway Line (paved)	Line	26	1	
Aviation Runway/Taxiway Name Text	Text	26	2	
Aviation Runway/Taxiway Line (unpaved)	Line	26	3	
Cemetery	Line	27	5	
Cemetery Text	Text	27	6	
Paved Slab	Line	27	7	
Paved Slab Text	Text	27	8	
Open Storage, Pile, U/C	Line	27	9	
Open Storage, Pile, U/C Text	Text	27	10	

<u>Data Element Group/Elements</u>	<u>Type</u>	<u>Level</u>	<u>Color</u>	<u>Notes</u>
<b><u>Planimetric Elements (continued)</u></b>				
Pipeline	Line	27	11	
Pipeline Text	Text	27	12	
Overhead Structure	Line	27	15	
Overhead Structure Text	Text	27	16	
Patio, Deck	Line	27	17	
Pool	Line	27	19	
Pool Text	Text	27	20	Letter "P"
Tank, Silo	Line	27	21	
Tank, Silo Text	Text	27	22	
Sign (point)	Point	27	23	
Sign Text	Text	27	24	Letter "S"
Sign Line	Line	27	25	
Substation Structure	Line	27	27	
Substation Text	Text	27	28	
Wall	Line	27	29	
Wall Text	Text	27	30	Letter "W"
Other Planimetric Features		27	33	
Other Planimetric Feature Text	Text	27	34	
Park/Recreation Area Line	Line	32	1	
Park/Recreation Area Text	Text	32	2	
Tree Location	Point	33	1	
Wooded Area Boundary Line	Line	33	3	
<b><u>Hypsometric Elements</u></b>				
Accentuated Contour Elevation Line	Line	29	1	
Accentuated Contour Elevation Number	Text	29	2	
Accentuated Contour Depression Line	Line	29	3	
Accentuated Contour Depression Number	Text	29	4	
Text-Clipped Accentuated Contour and Depression Line Segments	Line	29	9	
Building-Clipped Accentuated Contour and Depression Line Segments	Line	29	11	
Accentuated Approx. Contour Elevation Line	Line	29	5	
Accentuated Approx. Contour Elevation Number	Text	29	6	
Accentuated Approx. Contour Depression Line	Line	29	7	
Accentuated Approx. Contour Depression Number	Text	29	8	

<u>Data Element Group/Elements</u>	<u>Type</u>	<u>Level</u>	<u>Color</u>	<u>Notes</u>
<u>Hypsometric Elements (continued)</u>				
Unaccentuated Contour Elevation Line	Line	30	1	
Unaccentuated Contour Depression Line	Line	30	3	
Text-Clipped Unaccentuated Contour and Depression Line Segments	Line	30	9	
Building-Clipped Unaccentuated Contour and Depression Line Segments	Line	30	11	
Accentuated Approx. Contour Unaccentuated Approx. Contour Elevation Line	Line	30	5	
Unaccentuated Approx. Contour Depression Line	Line	30	7	
Spot Elevation Location	Point	31	1	
Spot Elevation Value Text	Text	31	2	
Water Surface Elevation Location	Point	31	3	
Water Surface Spot Elevation Value Text	Text	31	4	
U. S. Public Land Survey Corner Elevation	Text	31	6	

# NOTES

- Note (1): Where elements occur interior to the U. S. Public Land Survey section lines of the area being mapped.
- Note (2): Where elements occur exterior to the U. S. Public Land Survey section lines of the area being mapped, and interior to the map sheet border.
- Note (3): Depicting open water boundaries (greater than 5' in width) for lakes, ponds, streams, watercourses, and drainage ditches.
- Note (4): Depicting water boundaries too narrow to show both edges (less than 5' width) for streams, watercourses, and drainage ditches.



# SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

W239 N1812 ROCKWOOD DRIVE • PO BOX 1607 • WAUKESHA, WI 53187-1607 •

TELEPHONE (262) 547-6721  
FAX (262) 547-1103

*Serving the Counties of:*

KENOSHA  
MILWAUKEE  
OZAUKEE  
RACINE  
WALWORTH  
WASHINGTON  
WAUKESHA



## MEMORANDUM

**TO:** MCAMLIS Steering Committee

**FROM:** SEWRPC Staff

**DATE:** October 15, 2004

**SUBJECT: STATUS REPORT NO. 10 ON PHASE I OF THE MILWAUKEE COUNTY  
FLOODLAND MAPPING PROJECT**

This memorandum sets forth the progress made on Phase I of the Milwaukee County Floodland Mapping project from July 1, 2004, through September 30, 2004. That project phase includes all streams that are to be studied in the County, with the exception of those in the Root River watershed. This status report addresses project progress in the following three major areas and also identifies major issues that have arisen:

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

Overall, the Phase I portion of the project is about 80 percent completed. Progress is summarized in the attached Exhibit 1 and is graphically summarized on the map attached hereto as Exhibit 2.

### DATA ACQUISITION

During the period of July 1, 2004, through September 30, 2004, the following data acquisition activities were carried out:

- As indicated by Exhibit 1, data acquisition activities are substantially completed. When additional data needs are addressed as work proceeds, the acquisition of the data is coordinated with the Milwaukee Metropolitan Sewerage District (MMSD), the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Department of Transportation (WisDOT), and the City of Milwaukee.
- The Commission staff reviewed City of Milwaukee plan files for numerous Milwaukee River Riverwalk projects, identified pertinent plan sheets, obtained copies of those sheets from the City, and refined the hydraulic model of the River to reflect the Riverwalk.
- The Commission staff collected field measurements at bridges and drop structures along the main stem of the Kinnickinnic River, Lyons Park Creek, and Wilson Park Creek.



## HYDROLOGIC AND HYDRAULIC MODELING

During the reporting period, progress on hydrologic and hydraulic modeling for Phase I of the project included the following:

### **Kinnickinnic River Watershed**

- Substantially completed a detailed review of the hydraulic models for the main stem of the Kinnickinnic River, Lyons Park, and Edgerton Channel/Wilson Park Creek and began work on the models for Villa Mann Creek and the Villa Mann Creek Tributary.

### **Milwaukee River Watershed**

- Completed hydrologic and hydraulic modeling work for Southbranch Creek.
- Work continued on review and revision of the USEPA SWMM hydrologic model for Beaver Creek.

## FLOODLAND MAP PREPARATION

- Completed mapping of the 10-, 50-, 100-, and 500-year floodplain boundaries and the 100-year floodway boundaries along Southbranch Creek in the City of Milwaukee and the Village of Brown Deer. The maps reflect the features of the flood control project that was constructed by MMSD. Maps were provided for review by the City, the Village, and MMSD.

## MAJOR PROJECT ISSUES AND CONSIDERATIONS

Hydrologic Modeling Procedure Approvals—It was reported in the sixth and seventh status reports, dated January 10, 2003, and May 29, 2003, that, as part of their review of the hydrologic study for the Pike River watershed in Kenosha and Racine Counties, Post, Buckley, Schuh & Jernigan (PBS&J), the Federal Emergency Management Agency's (FEMA) map coordination contractor, was developing a set of standards for acceptable continuous simulation modeling studies. The final FEMA report entitled "Pike River Watershed Hydrology and Continuous Simulation Modeling Review and Summary," was issued on August 14, 2003. As we had speculated in past status reports, the PBS&J review and the resulting FEMA report support the continuous simulation modeling procedures as practiced by the Commission and the MMSD. The Commission wrote to FEMA and WDNR indicating Commission acceptance of the findings of the report; the Commission staff intention to proceed with continuous simulation modeling under the MCAMLIS floodplain mapping project; and asking that WDNR provide review comments on the hydrology memoranda that were submitted in 2002 and 2003 as described below.

SEWRPC Staff Memoranda summarizing the proposed hydrologic modeling approach for the Milwaukee River main stem, the entire Underwood Creek subwatershed, and the Menomonee River watershed were submitted to WDNR and FEMA on July 24, 2002, September 16, 2002, and April 24, 2003, respectively. Favorable reviews of the modeling approaches for the Milwaukee River main stem and the Underwood Creek subwatershed have been obtained from FEMA. Issues raised by FEMA regarding the Menomonee River watershed will be addressed under the process described below. To date, there still has been no response from the WDNR on any of the three memoranda; however, the Commission staff is continuing with the hydraulic modeling and floodplain mapping for the streams.

In December 2003, FEMA initiated a study to develop additional criteria for continuous simulation hydrologic analyses and to address the issues raised in the initial FEMA review of the proposed Menomonee River hydrologic analysis. The additional study is an extension of the August 14, 2003, FEMA study mentioned above. The Commission staff provided detailed comments on the draft scope of work for the additional study proposed in December 2003 and received assurances that FEMA would

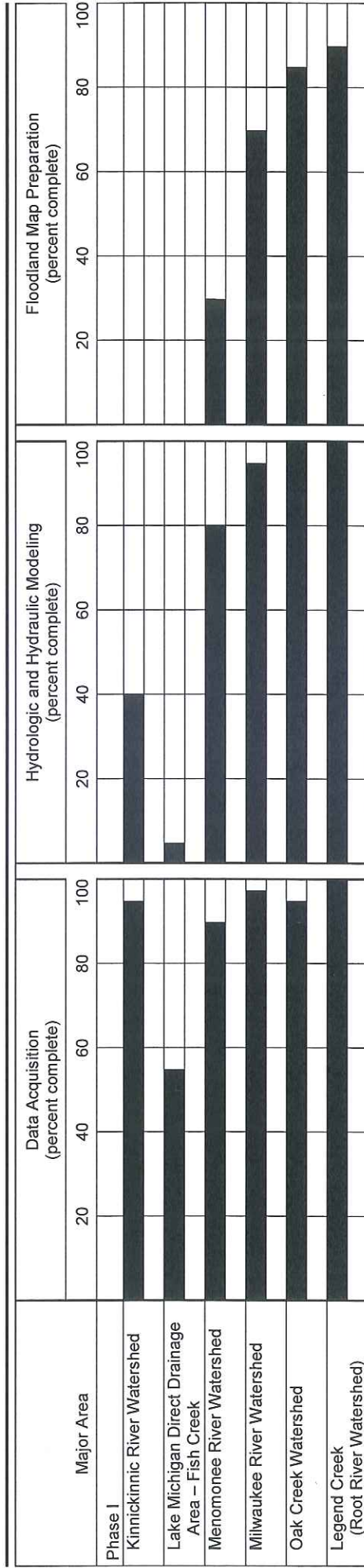
consider those comments. A draft of a key appendix from the additional study report was received in April 2004 and Commission staff comments were provided to FEMA. As second draft of that part of the study was received on September 15, 2004 and Commission staff comments were again provided to FEMA. As of the date of this status report, no additional work products had been received from FEMA.

\* \* \*

#100309 V1 - MCAMLIS PH I MILW CTY FLPL STATUS RPT 10  
PCE/MGH/pk

Exhibit 1

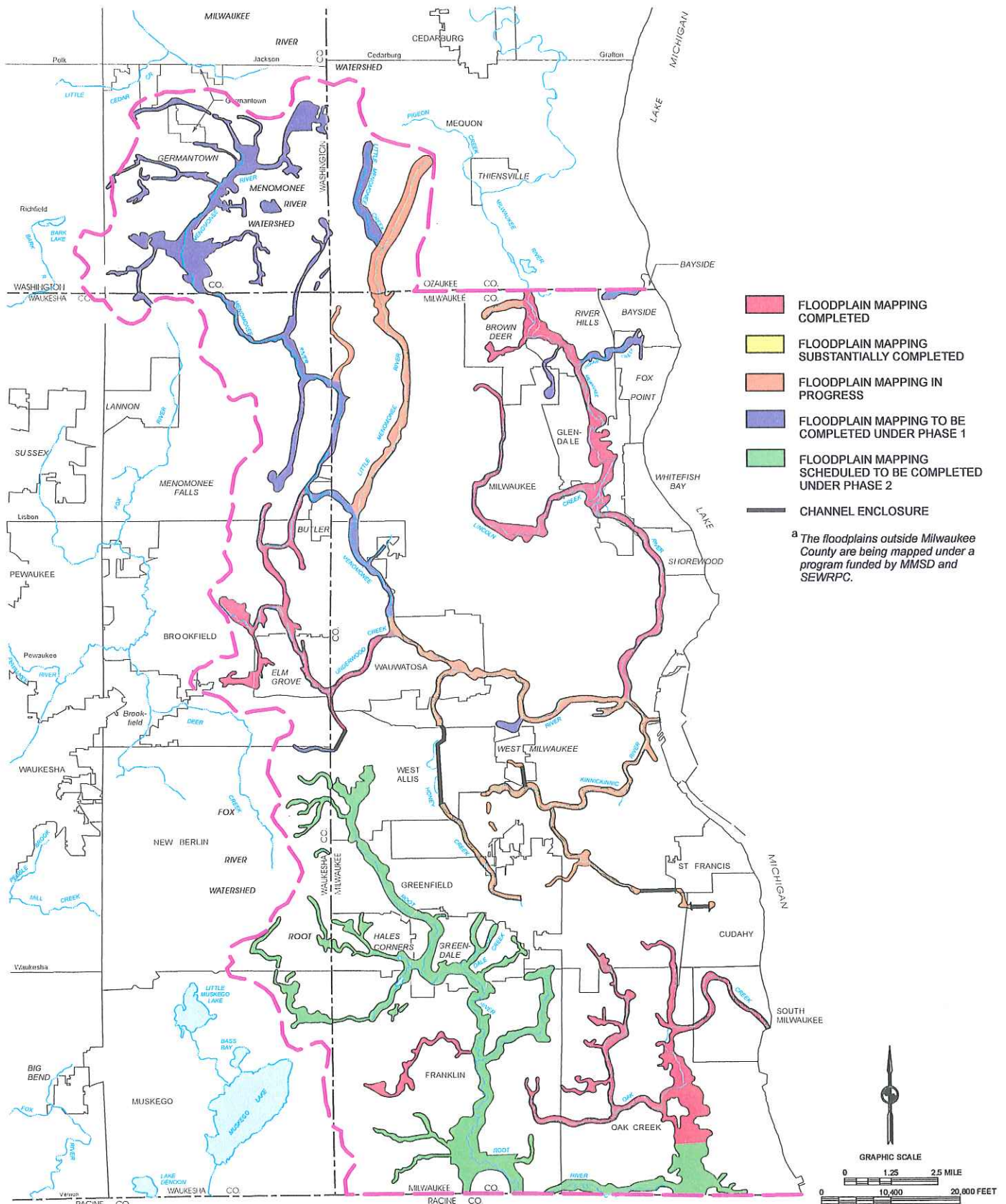
STATUS OF MCAMLIS PHASE I MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: SEPTEMBER 30, 2004





## Exhibit 2

### STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY<sup>a</sup> SEPTEMBER 30, 2004



Source: SEWRPC.

# SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

W239 N1812 ROCKWOOD DRIVE • PO BOX 1607 • WAUKESHA, WI 53187-1607 •

TELEPHONE (262) 547-6721  
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WASHINGTON  
WAUKESHA



## MEMORANDUM

**TO:** MCAMLIS Steering Committee

**FROM:** SEWRPC Staff

**DATE:** October 15, 2004

**SUBJECT: STATUS REPORT NO. 2 ON PHASE II OF THE MILWAUKEE COUNTY  
FLOODLAND MAPPING PROJECT**

This memorandum sets forth the progress made on Phase II of the Milwaukee County Floodland Mapping project from July 1, 2004, through September 30, 2004. That project phase includes the streams that are to be studied in the County in the Root River watershed except for Legend Creek, which was studied under Phase I. In general status reports will address project progress in the following three major areas and they will also identify major issues that have arisen:

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

This status report only lists data acquisition activities, since the modeling and map preparation stages of the project have not yet begun. Overall, the Phase II portion of the project is about 5 percent completed. Progress is summarized in the attached Exhibits 1 and 2.

### DATA ACQUISITION

During the period of July 1, 2004, through September 30, 2004, the following data acquisition activities were carried out:

- Completed coordination with National Survey & Engineering on the collection of hydraulic structure survey data for 29 structures located on the North Branch of the Root River, an Unnamed Tributary to the North Branch of the Root River, Ryan Creek, an Unnamed Tributary to Ryan Creek, the Northwest Branch of Whitnall Park Creek, Tess Corners Creek, and Wildcat Creek. The survey data collection was funded with a Strategic Initiative Grant from the Wisconsin Land Information Board.
- Work continued on coordination with the MMSD.



- All necessary data for mapping Lake Michigan coastal flood hazard areas has been obtained.

#### **FLOODLAND MAP PREPARATION**

- Mapping of Lake Michigan coastal flood hazard areas is about 40 percent complete.

#### **MAJOR PROJECT ISSUES AND CONSIDERATIONS**

Hydrologic Modeling Procedure Approvals—Because the hydrologic analyses intended to be applied in the Root River watershed are based on continuous simulation methodology, as are most of the analyses made under Phase I, Phase II of the project requires resolution of issues raised by the Wisconsin Department of Natural Resources and the Federal Emergency Management Agency. It was reported in the sixth and seventh status reports for Phase I, dated January 10, 2003, and May 29, 2003, that, as part of their review of the hydrologic study for the Pike River watershed in Kenosha and Racine Counties, Post, Buckley, Schuh & Jernigan (PBS&J), the Federal Emergency Management Agency's (FEMA) map coordination contractor, was developing a set of standards for acceptable continuous simulation modeling studies. The final FEMA report entitled "Pike River Watershed Hydrology and Continuous Simulation Modeling Review and Summary," was issued on August 14, 2003. As we had speculated in past status reports, the PBS&J review and the resulting FEMA report support the continuous simulation modeling procedures as practiced by the Commission and the MMSD. The Commission wrote to FEMA and WDNR indicating Commission acceptance of the findings of the report; the Commission staff intention to proceed with continuous simulation modeling under the MCAMLIS floodplain mapping project; and asking that WDNR provide review comments on the hydrology memoranda that were submitted in 2002 and 2003. To date, there still has been no response from the WDNR on any of the memoranda; however, the Commission staff is continuing with the hydraulic modeling and floodplain mapping for the streams.

In December 2003, FEMA initiated a study to develop additional criteria for continuous simulation hydrologic analyses and to address the issues raised in the initial FEMA review of the proposed Menomonee River hydrologic analysis. The additional study is an extension of the August 14, 2003, FEMA study mentioned above. The Commission staff provided detailed comments on the draft scope of work for the additional study proposed in December 2003 and received assurances that FEMA would consider those comments. A draft of a key appendix from the additional study report was received in April 2004 and Commission staff comments were provided to FEMA. As second draft of that part of the study was received on September 15, 2004 and Commission staff comments were again provided to FEMA. As of the date of this status report, no additional work products had been received from FEMA.

\* \* \*



Exhibit 1

STATUS OF MCAMLIS PHASE II MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: SEPTEMBER 30, 2004

Major Area	Data Acquisition (percent complete)					Hydrologic and Hydraulic Modeling (percent complete)					Floodland Map Preparation (percent complete)				
	20	40	60	80	100	20	40	60	80	100	20	40	60	80	100
Phase II															
Lake Michigan Coastal Flooding Areas						NA	NA	NA	NA	NA					
Root River Watershed															

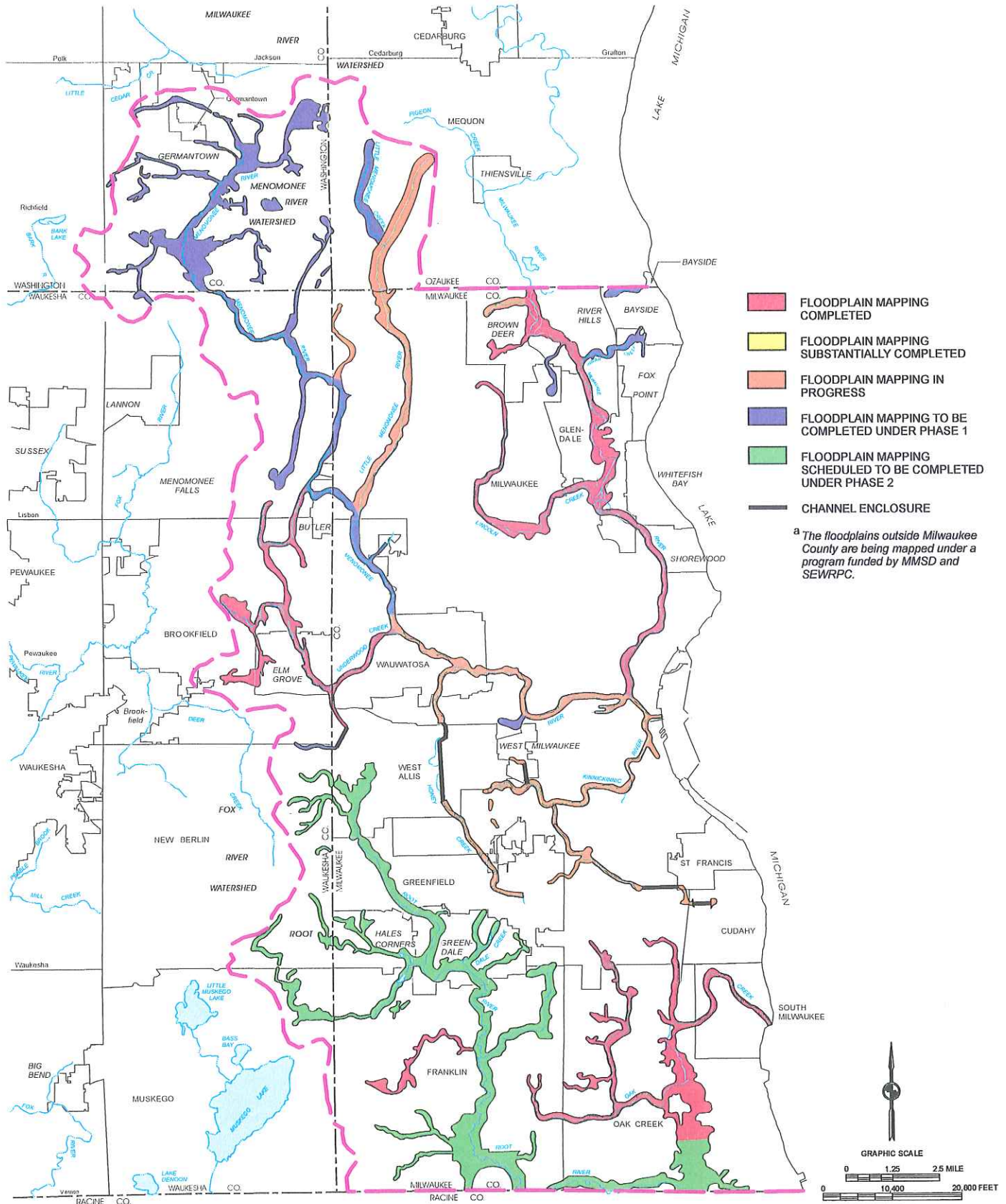
#100348 V1 - MCAMLIS PH II MILW CTY FLPL STATUS RPT 2

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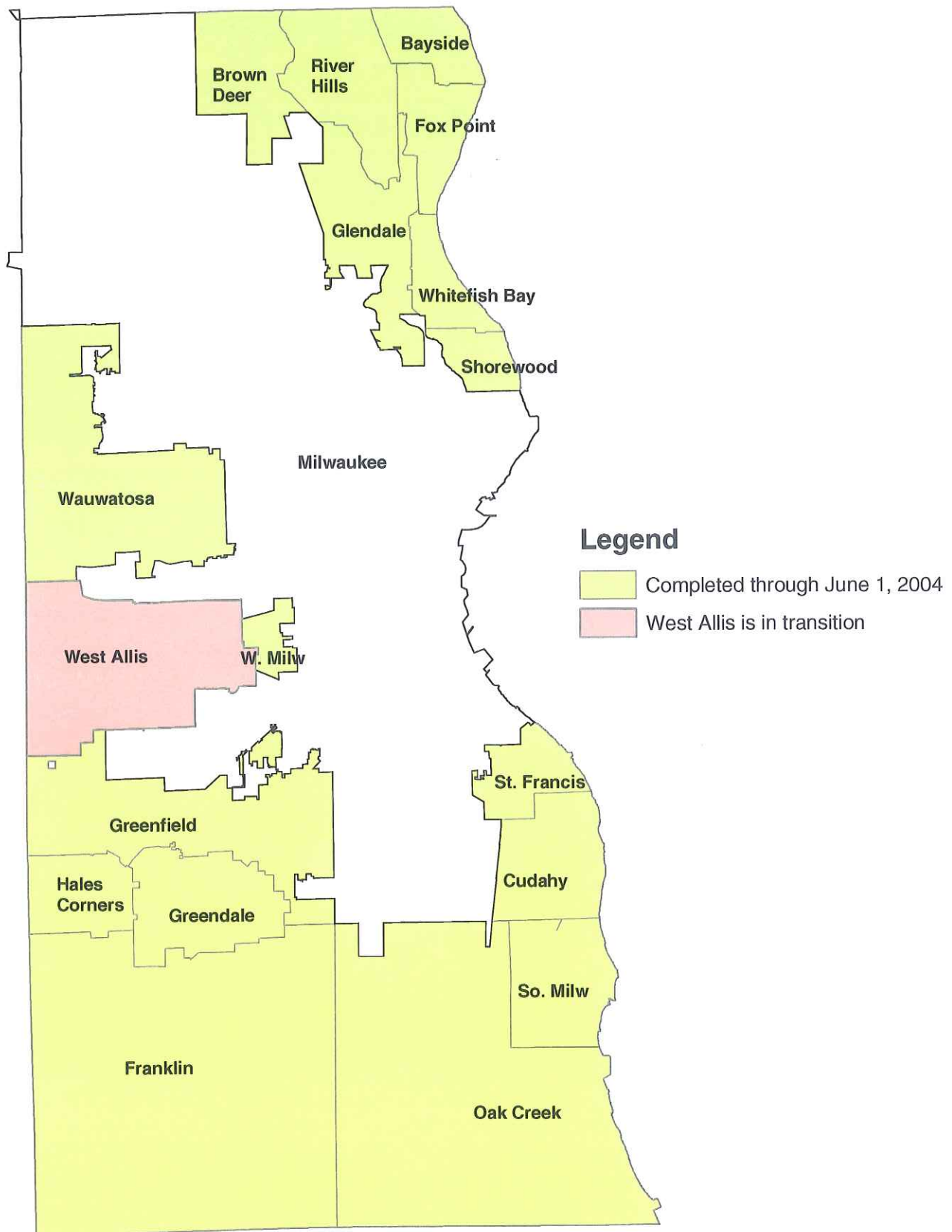
## Exhibit 2

### STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY<sup>a</sup> SEPTEMBER 30, 2004



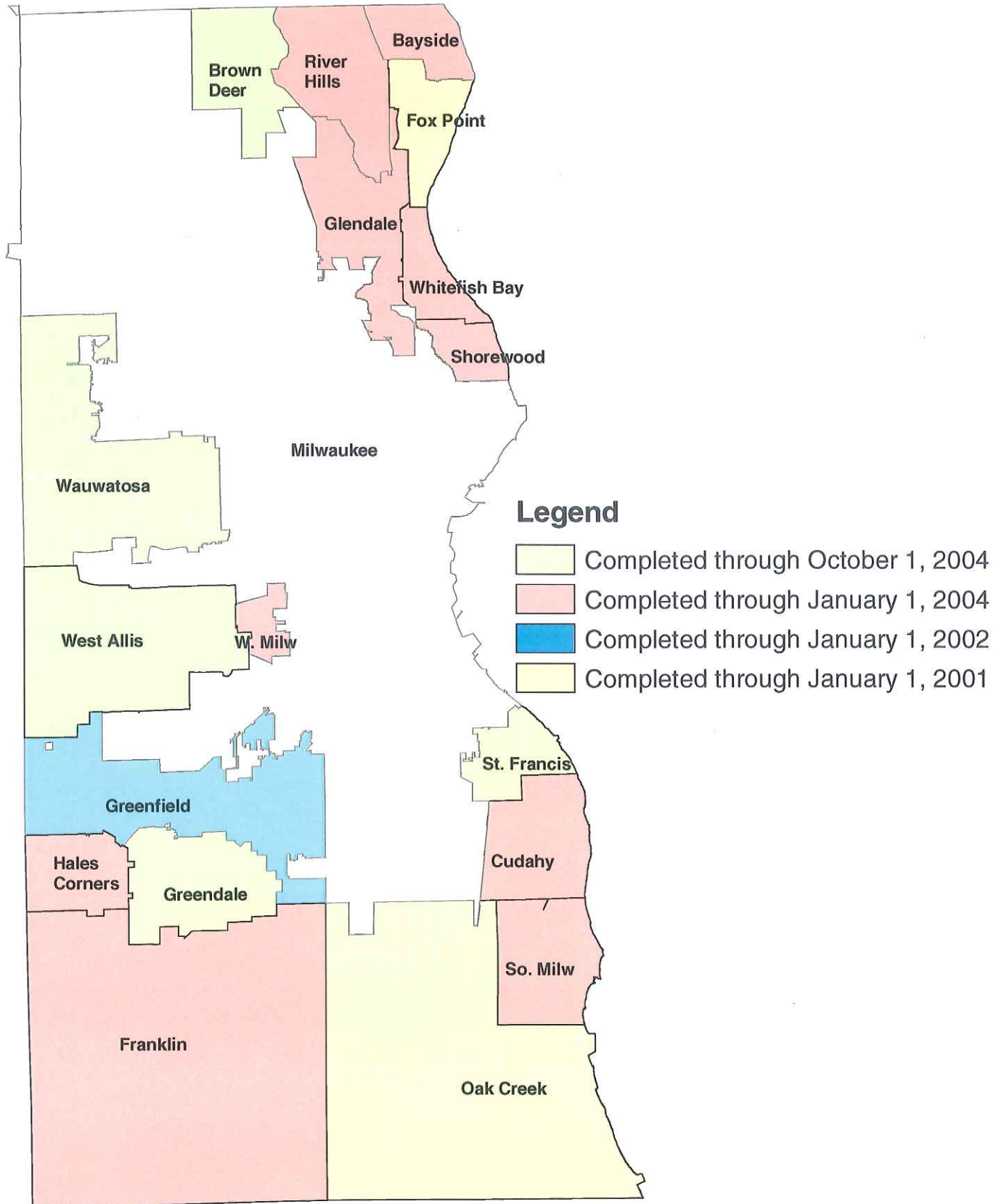
Source: SEWRPC.

# Milwaukee County Cadastral Status as of October 26, 2004





Milwaukee County Address Status as of October 26, 2004



## **STATUS OF MCAMLIS MAPPING PROJECTS BEING CARRIED OUT BY CITY OF MILWAUKEE STAFF**

The City of Milwaukee recompilation project was comprised of 40 U.S. Public Land Survey one-quarter section-based maps as delineated on the accompanying status map. These cadastral maps were compiled to fit the MCAMLIS survey control system utilizing original land records and associated descriptions and documents. This work has been carried out by the staff of the City of Milwaukee, Infrastructure Service Division, Central Drafting and Records Office. This project was completed November 30, 2001.

The City of Milwaukee cadastral map transformation project (Phase 1) consisted of 93 U.S. Public Land Survey one-quarter-section-based existing City of Milwaukee maps that were refit to the MCAMLIS survey control system utilizing computer algorithms. These 93 one-quarter section maps are delineated on an accompanying status map. This work was carried out by the staff of the City of Milwaukee, Department of Administration, Information and Technology Management Division. All 93 of the map sheets have been accepted by SEWRPC staff as meeting the relevant specifications. The agreement governing this project called for work to be completed by October, 2002. This project was completed February 25, 2003. On April 28, 2003 an addendum revised the project to include an additional 6 map sheets. This addendum called for the additional work to be completed by December 31, 2003. The additional work covered by the Addendum was completed September 16, 2003.

The City of Milwaukee cadastral map transformation project (Phase 2) consisted of 24 U.S. Public Land Survey one-quarter-section-based maps as delineated on an accompanying status map. All 24 of the map sheets have been accepted as being in compliance with the specifications in this project area. The agreement governing this project called for work to be completed by June 2002. This project was completed February 14, 2002.

The City of Milwaukee cadastral map transformation project (Phase 3) also consisted of 24 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. All 24 map sheets have been accepted as being in compliance with the specifications. The agreement governing this project called for work to be completed by June 2002. This project was completed February 14, 2002.

The City of Milwaukee cadastral map transformation project (Phase 4) also consisted of 24 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. All 24 map sheets have been accepted as being in compliance with the specifications. The agreement governing this project called for work to be completed by December 2002. This project was completed February 15, 2003. On April 23, 2003 an addendum revised the project to include an additional 6 map sheets. This addendum called for the additional work to be completed by June 30, 2003. The additional work covered by the Addendum was completed June 18, 2003.

The City of Milwaukee cadastral map transformation project (Phase 5) also consisted of 24 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. The agreement governing this project called for work to be completed by December 2002. This project was completed January 3, 2003. On April 25, 2003 an addendum revised the project to include an additional 6 map sheets. This addendum called for the additional work to be completed by June 30, 2003. The additional work covered by the Addendum was completed June 27, 2003.



The City of Milwaukee cadastral map transformation project (Phase 6) consisted of 26 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. The agreement governing this project called for work to be completed by December 2003. On April 30, 2003 an addendum revised the project to include an additional 6 map sheets. This addendum called for the additional work to be completed by December 31, 2003. The additional work covered by the Addendum was completed September 16, 2003.

The City of Milwaukee cadastral map transformation project (Phase 7) consisted of 24 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. The agreement governing this project called for work to be completed by April 2004. This project was completed January 30, 2004.

The City of Milwaukee cadastral map transformation project (Phase 8) consisted of 25 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. The agreement governing this project called for work to be completed by October 2004. This project was completed September 23, 2004.

The City of Milwaukee cadastral map transformation project (Phase 9A) consists of 12 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. As of October 26, 2004, 2 maps from this project area have been submitted to SEWRPC staff for review and 1 map sheet has been accepted as being in compliance with the specifications. The agreement governing this project calls for work to be completed by October 2004. Due to staffing issues, the City now expects that the project will be completed by January, 2005.

The City of Milwaukee cadastral map transformation project (Phase 9B) consists of 12 U.S. Public Land Survey one-quarter-section-based maps again as delineated on an accompanying status map. As of October 26, 2004, no maps from this project area have been submitted to SEWRPC staff for review and, accordingly, no map sheets have been accepted as being in compliance with the specifications. The agreement governing this project calls for work to be completed by October 2004. Due to staffing issues, the City now expects that the project will be completed by January, 2005.

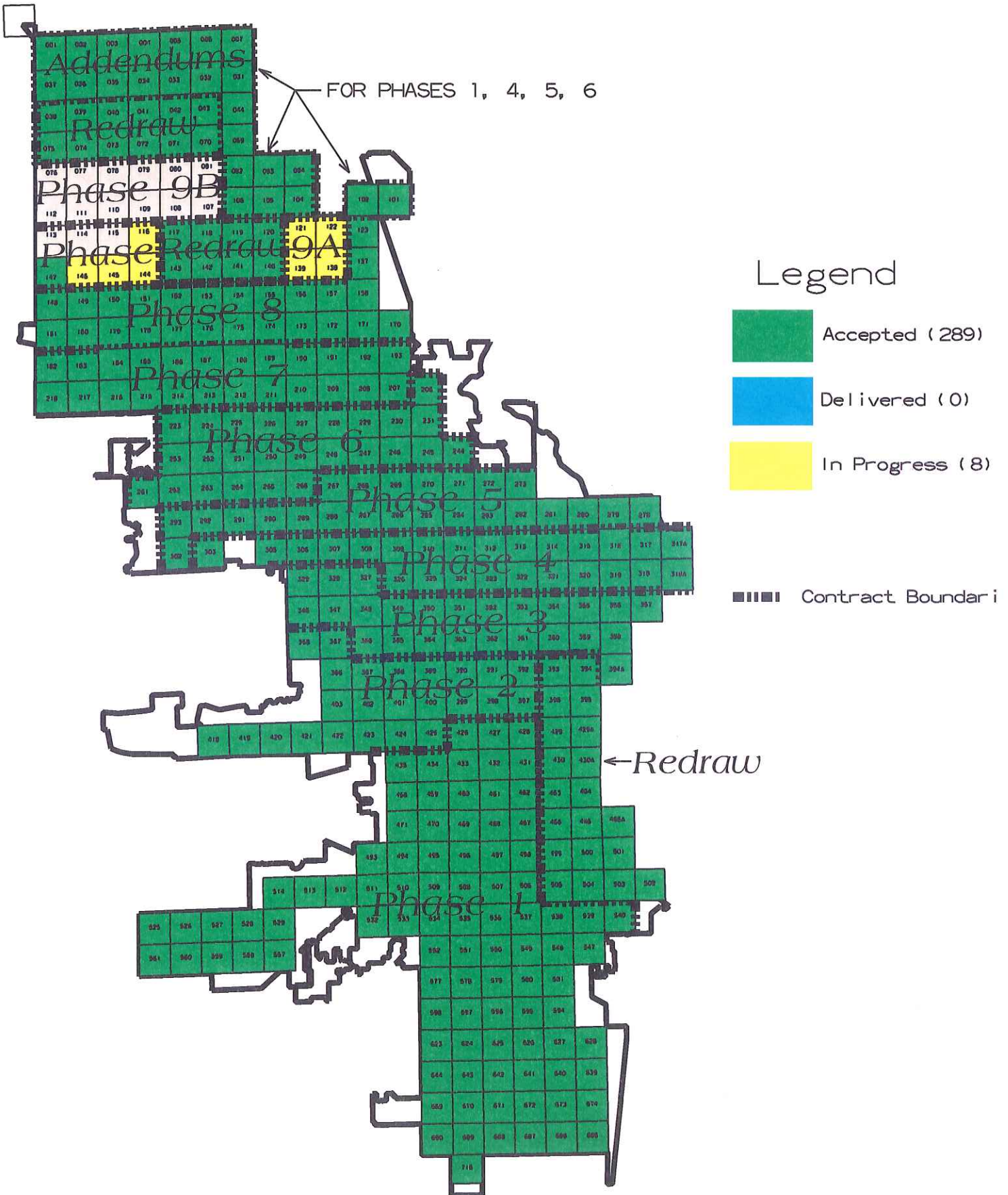
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# MCAMLIS Transformation Project Progress Map



## EXECUTED LICENSE AGREEMENTS

Number of Executed Agreements		Licensee	Effective Date
Since 1995	For 2003	2003	
90.	1.	North Shore Fire Department	1/13/03
91.	2	Planning & Design Institute, Inc.	2/6/03
92.	3.	Nancy M. Aten	2/12/03
93.	4.	Graef, Anhalt, Schloemer and Associates, Inc.	4/2/03
94.	5.	Sandridge Commercial Real Estate, LLC	4/25/03
95.	6.	Bloom Consultants LLC	7/11/03
96.	7.	Landscape Architects, Inc.	7/22/03
97.	8.	Jenkins Survey and Design, Inc.	7/23/03
98.	9.	Access Engineering LLC	7/30/03
99.	10.	Fifth Ward Association	12/08/03
100.	11.	West Allis-West Milwaukee School District	12/10/03
Since 1995	For 2004	2004	
101.	1.	The Sigma Group	01/21/02
102.	2.	T N & Associates	02/20/04
103.	3.	Hayes Engineering Company	02/23/04
104.	4.	Geocomm	03/30/04
105.	5.	J. Spear Associates, Inc.	06/16/04
106.	6.	Key Engineering Group, Ltd.	07/21/04
107.	7.	LandCraft Survey and Engineering, Inc.	08/26/04
108.	8.	The Design Office	10/06/04
109.	9.	Friebert, Finerty & St. John, S.C.	10/26/04



# COUNTY EXECUTIVE'S 2005 BUDGET

DEPT: MILWAUKEE COUNTY AUTOMATED LAND INFORMATION SYSTEM

UNIT NO. 1923

FUND: General - 0001

## OPERATING AUTHORITY & PURPOSE

Pursuant to Sections 15.105(16), 16.971, 20.505(4)(im) and 59.72 of the Wisconsin Statutes and County Board Resolution File 90-707(a), approved on November 8, 1990, the Milwaukee County Automated Land Information System (MCAMLIS) may design, develop and implement a land information system integrating property and ownership records with U.S. Public Land Survey referenced parcel-identified boundary information; prepare boundary-referenced parcel property maps suitable for producing accurate land title or survey boundary line information; and prepare maps of documented accuracy suitable for local planning.

Pursuant to Section 59.43, funding for a land information office, modernization of land records and the State of Wisconsin Land Information Program and Board is collected via a \$7 surcharge on the County's existing four dollar Recording Fee. Four dollars of the additional \$7 surcharge are retained locally and specifically designated for expenditures associated with the creation, maintenance, and enhancement of the Milwaukee County Automated Land Information System within guidelines

established by the Wisconsin Land Information Board (WLIB). One dollar of the additional \$7 surcharge is also retained locally and specifically designated for expenditures associated with initiatives to develop and maintain a computerized indexing of the County's land information records relating to housing, including the housing element of the County's land use plan under Section 66.001(2)(b) (Smart Growth law) also within guidelines established by the WLIB. (No portions of the \$4 and \$1 surcharges are available for general County purposes.) Two dollars of the additional \$7 surcharge are forwarded to the WLIB. The County continues to retain its \$4 share of the Recording Fee.

Previous Register of Deeds Recording Fees	\$4
Fee for MCAMLIS	4
Fee for Land Records Modernization Initiatives	1
Fee for State Land Information Board	2
	<u>\$11</u>

BUDGET SUMMARY				
	2003 Actual	2004 Budget	2005 Budget	2004/2005 Change
Services	\$ 866,757	\$ 911,500	\$ 953,000	\$ 41,500
County Service Charges	0	1,000	1,000	0
Abatements	(1,975)	0	0	0
Total Expenditures	\$ 864,782	\$ 912,500	\$ 954,000	\$ 41,500
Encumbrances	0	0	0	0
Total Expenditures & Encumbrances	\$ 864,782	\$ 912,500	\$ 954,000	\$ 41,500
State Grants	\$ 223,055	\$ 100,000	\$ 79,000	\$ (21,000)
Sewer District & Utility Contributions	0	0	0	0
Recording Fee Surcharge	1,474,750	812,500	875,000	62,500
Total Revenue	\$ 1,697,805	\$ 912,500	\$ 954,000	\$ 41,500
Contribution to Reserve Account	\$ 833,023	0	0	0
Property Tax Levy	\$ 0	\$ 0	\$ 0	\$ 0





## COUNTY EXECUTIVE'S 2005 BUDGET

DEPT: MILWAUKEE COUNTY AUTOMATED LAND INFORMATION SYSTEM

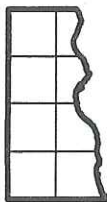
UNIT NO. 1923

FUND: General - 0001

### BUDGET HIGHLIGHTS

- This appropriation provides 2005 expenditure authority of \$954,000 for the Automated Land Information System. Revenue of \$875,000 is projected to be received from the \$4 surcharge collected by the Register of Deeds earmarked for land information modernization by Section 59.72(5) of the Wisconsin Statutes. Revenue of \$175,000 is projected to be collected from the \$1 surcharge which is also collected by the Register of Deeds. An additional \$79,000 is expected to result from grants to be awarded to the County by the Wisconsin Land Information Board (WLIB). Milwaukee County is not required to provide tax levy dollars.
- Expenditure authority of \$954,000 is comprised of \$717,000 to continue the development and maintenance of the automated base map and parcel-based land information system as provided for in the plan approved by the County Board and to undertake selected plan development work; \$175,000 to develop and maintain a computerized indexing of the County's land information records related to housing in a manner consistent with the requirements of Section 66.001(2)(6) Wisconsin Statutes; \$60,000 for surveying services provided by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) in performance of its duties as the Milwaukee County Surveyor under the requirements of Section 59.635, Wisconsin Statutes; \$1,000 to obtain subdivision and map survey prints from the Register of Deeds; and \$1,000 for meeting and travel expenses.
- Beginning in 2005, the Architectural and Engineering (A&E) Division of the Department of Parks and Public Infrastructure will assume the project management function for MCAMLIS from the Southeastern Wisconsin Regional Planning Commission (SEWRPC). A&E will receive \$206,589 in existing MCAMLIS funds for project management. This includes conceptual development of individual projects, development of project specifications, writing contracts, preparation of invoices to draw down funds as expended, payment of subcontractors, recordkeeping and general maintenance of MCAMLIS data holding. In addition, this effort will merge the County's internal GIS functions with MCAMLIS.
- \$142,000 in existing MCAMLIS funds have been included in the operating budget for Org 3400 - Register of Deeds to upgrade real estate records software. This software will be financed by the \$1 surcharge dedicated to land records modernization.
- In addition, \$73,695 in existing MCAMLIS funds have been included in Org. Unit 3400 to support 100 percent of the salary, social security and fringe benefit costs of a Geographic Information Technician.
- In September 2004, the MCAMLIS Steering Committee approved a total appropriation of \$261,787 in existing MCAMLIS funds for a regional water supply system study leading to the development of additional land and infrastructure information as well as plan recommendations. This appropriation is to be divided over three years, 2004 to 2006, in an amount of approximately \$87,262 each year. SEWRPC, working in conjunction with Milwaukee County and the other six counties within the Southeastern Wisconsin Regional Planning area, will complete the water study. In September of 2002, SEWRPC adopted the *Regional Water Supply Planning Program Prospectus*, which calls for the fiscal participation of Milwaukee County in conjunction with the other six counties.





MILWAUKEE COUNTY  
AUTOMATED MAPPING AND  
LAND INFORMATION SYSTEM

c/o Southeastern Wisconsin  
Regional Planning Commission  
W239 N1812 Rockwood Drive  
PO Box 1607  
Waukesha, Wisconsin 53187-1607

MEMORANDUM

TO: MCAMLIS Steering Committee  
FROM: Thomas D. Patterson, MCAMLIS Project Manager  
DATE: July 7, 2004 (Revised October 28, 2004)  
SUBJECT: Proposed MCAMLIS Replacement Digital Topographic Mapping Program

4a  
- approved project  
- 4 yr plan w/potential 9 1/2 yr completion.  
- Encumber funding through surplus funding in Budget

Introduction

Replacement of the older existing digital topographic mapping in Milwaukee County has been discussed by the MCAMLIS Steering Committee on numerous occasions over the past several years. Indeed, such a replacement mapping program was recommended in the MCAMLIS Program Strategic Assessment document adopted by the Steering Committee at its meeting held on October 8, 2002, and again in the update to that Strategic Assessment document adopted by the Steering Committee at its meeting held on June 10, 2003. The major impediment to undertaking such a replacement program has been the inability to secure a sustained stream of funding sufficient to carry out the program over a relatively short period of time. The discovery at the end of 2003 of an amount in excess of \$3 million in previously unreported MCAMLIS Program reserve funds now makes the initiation of a replacement digital topographic mapping program feasible. Accordingly, a proposal for a four year program for the replacement of the existing MCAMLIS digital topographic mapping with an estimated cost of about \$2.7 million was presented to the Steering Committee for consideration at its meeting held on July 20, 2004.

At its July 20 meeting, the Steering Committee deferred action on the proposal requesting instead that the Chairman appoint a Subcommittee on Topographic Mapping to consider, and to make recommendations back to the Steering Committee on, three major concerns of Steering Committee members relating to the specifications proposed to be used for the MCAMLIS Replacement Digital Topographic Mapping Program. More specifically, these concerns were:

1. the utility of the presently available MCAMLIS digital topography mapping (that is, is the current mapping being used, and if so, how is it being used);
2. the conformance of the proposed substantive and digital format specifications to state-of-the-art practices; and
3. the need for a digital topographic map replacement program.

At the MCAMLIS Steering Committee meeting held on September 14, 2004, the Subcommittee presented a series of recommendations<sup>1</sup> to the Steering Committee concerning the proposed program including a recommendation that a replacement digital topographic mapping program should be undertaken; however, the Subcommittee further reported that it had been unable to fully resolve several issues, which it believed

<sup>1</sup> These recommendations are set forth in the Subcommittee's "Report to the MCAMLIS Steering Committee," dated September 3, 2004.



to be important, concerning the proposed specifications and the replacement digital topographic mapping program. These issues were:

1. Whether or not the digital point, line, and area features contained in the proposed project specifications should continue to be mapped as interpreted, symbolized, and annotated features in light of the possible incorporation of a digital orthophotography layer into the digital topographic map replacement program.
2. Whether or not the requirement in the proposed specifications that delivery of the digital map products from the contractor in Integrgraph/MicroStation DGN format should be continued in view of emerging computer software environments incorporating geodatabases.
3. The determination of the useful life of the topographic mapping such that a suitable map replacement cycle could be determined and recommended to the Steering Committee for use in formulating future MCAMLIS annual work programs.

The Subcommittee recommended that the Steering Committee consider appointing an additional Subcommittee or work group to review these issues. Accordingly, the Steering Committee requested the Chairman to augment the membership of the Subcommittee with additional members having "hand-on" experience with the use of the MCAMLIS digital topographic mapping and to ask the Subcommittee to reconvene to determine if these remaining issues might be resolved by further deliberation by the expanded Subcommittee membership. This expanded Subcommittee met again on October 19, 2004, to discuss these three issues and to formulate a response to the Steering Committee.<sup>2</sup>

This memorandum has been revised to reflect the changes to the proposed digital topographic mapping specifications recommended by the Subcommittee to the Steering Committee.

#### The Need for Replacement of Existing Topographic Mapping

The ages of existing digital topographic mapping are shown on the map attached hereto as Map 1. Approximately 82 percent of the existing digital, topographic mapping is now between ten years and 20 years old. All digital topographic mapping carried out since 1992 has been acquired under the auspices of the MCAMLIS Program and was digitally compiled directly from three-dimensional stereoscopic models constructed from aerial photography acquired specifically for that purpose. All digital topographic mapping prepared prior to 1992 was prepared using older technology and was converted to digital format either by board digitizing or by scanning of hard copy maps, rendering these digital maps moderately more cumbersome to use, but in no way compromising the accuracy of the features portrayed on the maps. Increasingly, comments from users of these maps indicate that the continually advancing age of the mapping adversely affects the map's utility for users; not only from the standpoint that newer development is absent from these maps, but also from the standpoint that more recent demolitions, public works reconstructions, and private redevelopment projects are not shown.

#### Proposed Digital Topographic Mapping Replacement Program

A proposed program for the replacement of all MCAMLIS digital topographic mapping within Milwaukee County is illustrated on the map attached hereto as Map 2. The proposal includes replacement of the two most recently completed digital topographic mapping projects carried out by the MCAMLIS Steering Committee. These two projects: the 1999 Cudahy – St. Francis – South Milwaukee – General Mitchell International Airport Project and the 2002 Lincoln Creek project are relatively recent and were both carried out using still current "state-of-the-art" map compilation techniques including the preparation of a digital terrain model; however, the recommendation of the project staff is to also remap these two

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<sup>2</sup> These recommendations are set forth in the Subcommittee's "Report to the MCAMLIS Steering Committee," dated September 3, 2004, as revised October 28, 2004.



areas<sup>3</sup>. Additionally, it should be noted in this regard that staff of the City of St. Francis has recently contacted the MCAMLIS Project Manager about the possibility of acquiring updated digital topographic mapping that would include the completed State Trunk Highway 794 and its immediately adjacent areas.

The proposed program would replace all existing digital topographic mapping over a four year period as identified on Map 2. All revisions to the MCAMLIS digital topographic mapping specifications recommended by the MCAMLIS Subcommittee on Topographic Mapping—with the exception of a six-inch pixel, color digital orthophotography layer and with the exception of the recommended deletion of certain specified planimetric map features.<sup>4</sup>—have been incorporated into a revised cost estimate table which follows. MCAMLIS project staff consultation with a photogrammetric engineer has established that the elimination of the identified planimetric map features provides, at best, a marginal opportunity for cost reduction; an amount of no more than \$100 per square mile—perhaps on the order of \$24,000 for the entire project—and certainly less than one percent of the total estimated project cost. Accordingly, MCAMLIS project staff recommends that these features continue to be shown on the MCAMLIS digital topographic maps, if for no other reason than for historical continuity. The incremental cost of preparing six-inch pixel, color digital orthophotography is shown separately in the cost estimates table.

The estimated cost to carry out this replacement digital topographic mapping program is approximately \$2,965,050, which amount would be spread over a four year period as set forth in the table below.

### PROPOSED MCAMLIS REPLACEMENT DIGITAL TOPOGRAPHIC MAPPING PROGRAM

#### Cost Estimates

	Replacement Digital Topographic Mapping	Incremental Cost for Six-Inch Pixel Color Digital Orthophotography
First Year (53.75 square miles)	\$ 660,495	\$ 38,970
Second Year (56.50 square miles)	705,545	40,965
Third Year (61.75 Square miles)	738,335	44,770
Fourth Year (70.00 square miles)	860,675	50,750
Total	\$2,965,050	\$175,455

<sup>3</sup> At the conclusion of a four year replacement mapping program, the mapping in the 1999 project area will be eight or nine years old and nearing the end of its "useful life" as determined by the MCAMLIS Subcommittee on Topographic Mapping. The mapping in the 2002 project area constitutes a relatively small area—8.5 square miles—and would be about six or seven years old by the conclusion of the remapping program.

<sup>4</sup> These features are: recreation trail lines and associated text; power, telephone, and light pole locations; railway signals; signs—including billboards—and associated text; and "miscellaneous" special planimetric features and associated text (these features occur rarely, are often ephemeral, and include such features as spoil piles and salt and coal storage piles).

Assumptions:

Elimination of the quarter section map sheet format (digital map sheet layouts can be provided from another source).

Elimination of the delivery of mylar quarter section map sheets.

Elimination of the U.S. Public Land Survey corner and related geodetic survey information (this information can be provided from another source).

Digital delivery of all products on a tile basis (no overlap) consisting of a tile schema of no less than 10,000 map grid feet N/S by 10,000 map grid feet E/W.

Average cost for replacement digital topographic mapping will be about \$12,570/square mile:

Average cost for replacement digital topographic mapping in the 1999 and 2002 replacement mapping project areas will be about \$10,240/square mile;

Average cost for new six-inch pixel, color digital orthophotography will be about \$725/square mile:

\$440/square mile for aerial photography and related services;

\$600/square mile for ground control, paneling, and related services;

\$5,330/square mile for the completion of new digital terrain models and the generation of two foot interval contours (NMAS at a map scale of 1:1200) and related services;

\$3,000/square mile for the update and revision of previously completed digital terrain models, and the generation of new two foot internal contours (NMAS at a map scale of 1:1200) and related services;

\$5,775/square mile for interpreting and symbolizing planimetric and hypsometric map feature detail and related services;

\$725/square mile for the preparation of new six-inch pixel, color digital orthophotography in conjunction with the replacement digital topographic mapping;

\$425/square mile for quality control and digital file structure review.

Cost estimates are based upon 2004 labor rates, equipment charges, and material costs, and upon the assumption that the entire project would be administered as a single contract. Entering into a contract or contracts after 2004 may result in an increase in these estimated costs. Undertaking this project with multiple contracts negotiated on a year-by-year basis may also result in increases in these estimated costs.

The cost of this program is proposed to be funded through the use of the available surplus funds estimated to total about \$3,784,000 as of December 31, 2003, or by the use of a portion of the surplus funds in combination with future retained fee receipts allocated from future MCAMLIS yearly operating budgets as may be necessary to complete the work in a timely fashion.

Recommendations

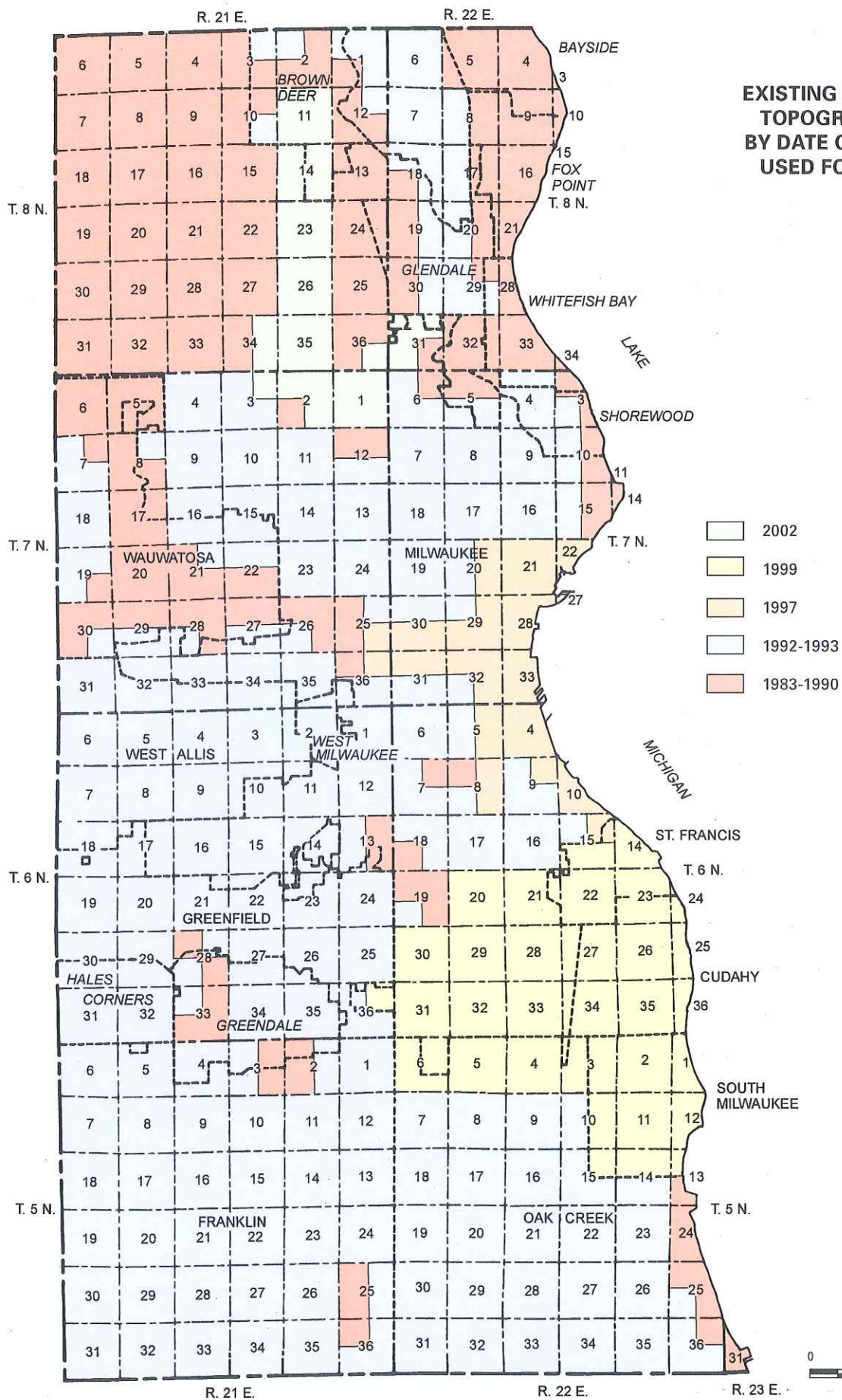
Project staff recommends that the Steering Committee undertake a four year program leading to the preparation of replacement digital topographic mapping as set forth in the above table and as delineated on Map 2. It is also recommended that the MCAMLIS Steering Committee enter into a sole source agreement, or agreements, with the Southeastern Wisconsin Regional Planning Commission to acquire the subject replacement digital topographic mapping over a four year period. The Regional Planning Commission will in turn subcontract with a qualified photogrammetric engineer judged to be capable of completing the desired mapping to the MCAMLIS digital topographic mapping specifications and standards as revised based upon the recommendations of the MCAMLIS Subcommittee on Topographic Mapping. It is further recommended that the program be funded using a combination of surplus funds and



yearly operating budget amounts as determined on a yearly basis. Finally, it is recommended that this program begin immediately using aerial photography acquired by AeroMetric, Inc., for the two northern most townships in Milwaukee County during the Spring of 2004. This photography, acquired by AeroMetric, Inc., was designed for producing digital two foot contour interval topographic base maps to MCAMLIS specifications and standards.

\* \* \*



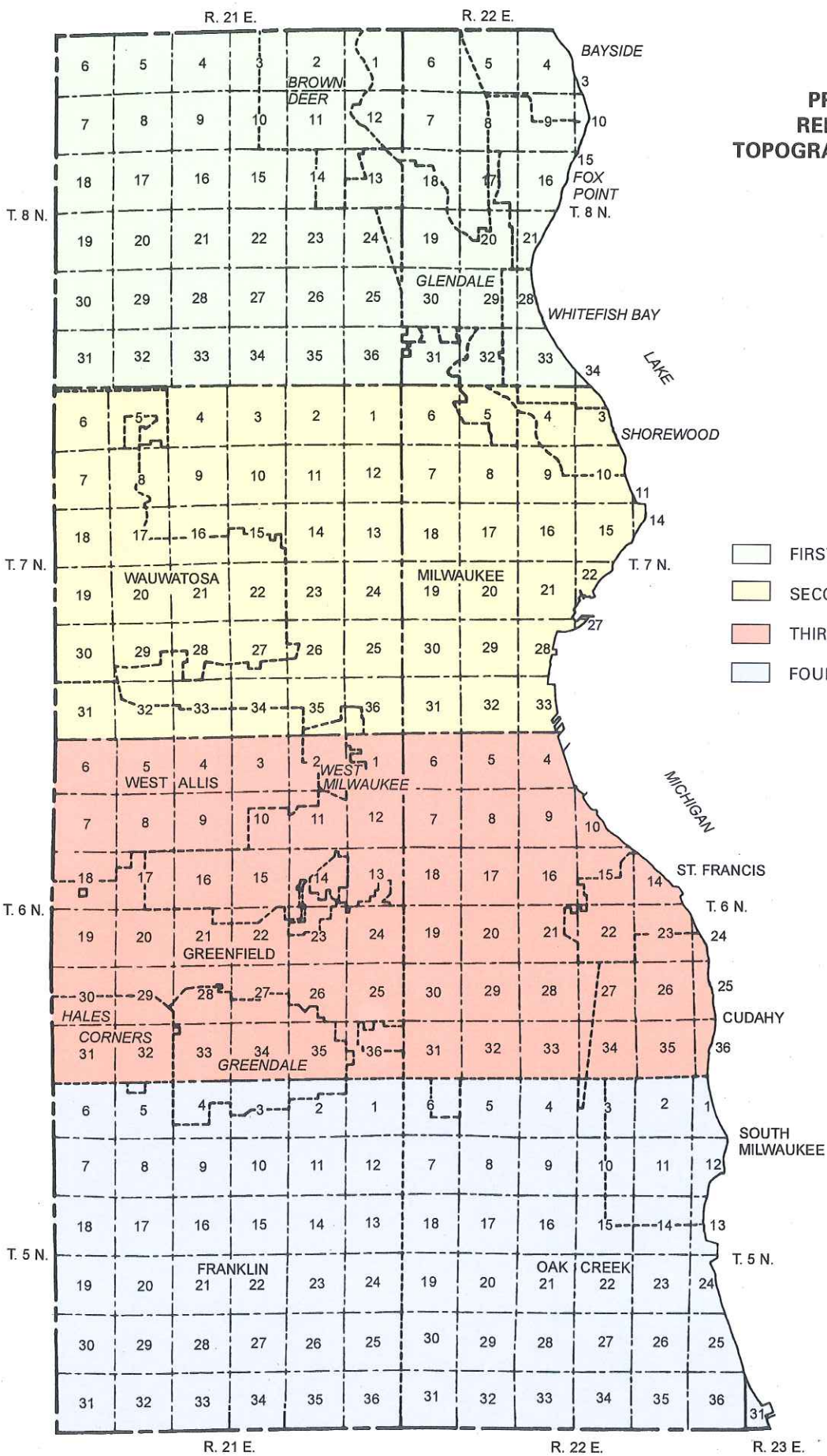


JULY 7, 2004



GRAPHIC SCALE

0 2 4 MILES



NOVEMBER 1, 2004



GRAPHIC SCALE

0 2 4 MILES



4a

**MILWAUKEE COUNTY AUTOMATED MAPPING AND LAND INFORMATION  
SYSTEM**

**SUBCOMMITTEE ON TOPOGRAPHIC MAPPING**

September 3, 2004 (Revised October 28, 2004)

**REPORT TO THE MCAMLIS STEERING COMMITTEE**

**BACKGROUND**

At the MCAMLIS Steering Committee meeting held on July 20, 2004, the Committee considered a proposal from project staff to undertake a four-year Digital Topographic Replacement Mapping Program. Among the reasons cited by the staff in making this proposal was the fact that more than 80 percent of the existing digital topographic mapping for Milwaukee County was now more than ten years old. Also noted was the fact that only the two most recent digital topographic mapping projects—the St. Francis-Cudahy-South Milwaukee-General Mitchell International Airport project and the Lincoln Creek-Southbranch Creek project—together representing less than 15 percent of the County's available topographic mapping were completed using current state-of-the art photogrammetric map compilation techniques including the creation of a digital terrain model. Not unimportantly in making this proposal, the project staff had identified the necessary funds to carry out this proposed program estimated at that time to have a cost of about \$2.7 million.

Following discussion of this proposal by the Committee at the July 20<sup>th</sup> meeting, the Committee Chairman was asked to create a Subcommittee to provide counsel to the Committee on the need for this program: more specifically, on the utility of the mapping; the conformance of the proposed substantive and digital format specifications to state-of-the-art practices; and the need for the program. Accordingly, the Chairman acted to create the requested Subcommittee on Topographic Mapping.

The original recommendations of the Subcommittee on Topographic Mapping were presented to the MCAMLIS Steering Committee at its meeting held on September 14, 2004. After reviewing and discussing those recommendations, the Steering Committee requested that the Chairman augment the membership of the Subcommittee to include several additional members capable of providing "hands-on" experience in the use of the MCAMLIS digital topographic mapping or capable of commenting on the general utility of digital point, vector, and area map feature information in conjunction with the use of digital orthophotography. The Steering Committee further requested that the augmented Subcommittee be reconvened to address several issues left unresolved by the first two Subcommittee meetings. More specifically, these issues were:

1. A review of the digital map feature content currently contained in the MCAMLIS digital topographic mapping specification to determine if all such features previously mapped as digital point, line, and area features continue to be needed, particularly if the Steering Committee should decide to incorporate digital orthophotography as a component of the standard MCAMLIS digital topographic mapping specifications;
2. A review of that portion of the current specifications requiring delivery of the map products in Integrator/MicroStation DGN format, particularly in view of emerging computer software operating environments that incorporate geodatabases; and



3. An evaluation of the useful life of the topographic mapping and the recommendation of a suitable digital topographic map replacement cycle for consideration in the development of future MCAMLIS annual work programs.

This report sets forth the comments, observations, and recommendations of the Subcommittee to the full Committee.

## MEMBERSHIP OF THE SUBCOMMITTEE

The original membership of the Subcommittee was as follows:

Mr. Timothy R. Bate, P.E. ....	Engineering Planning Manager Chairman Milwaukee Metropolitan Sewerage District; and President, Wisconsin Section, American Society of Civil Engineers
Mr. Gregory G. High .....	Director, Architectural and Engineering Services Department of Parks and Public Infrastructure Milwaukee County
Mr. Rick Norris, P.E. ....	President, Norris and Associates, Inc. Consulting Engineers
Mr. William C. Shaw .....	GIS Manager, WE Energies
Mr. Timothy J. Thur, P.E. ....	Chief Sewer Design Manager Environmental Engineering Division City of Milwaukee

Following the September 14, 2004 meeting of the MCAMLIS Steering Committee, the Chairman appointed the following three individuals to augment the original membership of the Subcommittee:

Ms. Alyssa A. Bails, AICP .....	GIS Division Manager, R.A. Smith & Associates, Inc.
Mr. Thomas J. Tym .....	Head, Technology Services Department, Ruekert & Mielke, Inc.
Mr. Richard S. Vraga .....	Liaison for Wisconsin and Illinois, U.S. Geological Survey

## MEETINGS

The first meeting of the Subcommittee on Topographic Mapping was held on Friday, August 13, 2004, in Room 203P of the Milwaukee County Courthouse. Subcommittee members present were: Mr. Bate, Mr. High, Mr. Norris, Mr. Shaw, and Mr. Thur.

Others present were: Ms. Marcia Lindholm, Manager, Central Drafting and Records, City of Milwaukee; and Mr. Thomas D. Patterson, MCAMLIS Project Manager.

In order to provide a common background for the Subcommittee members in their discussions and deliberations, Mr. Patterson presented a short history of the MCAMLIS Program and of that Program's four major initial work efforts. These work efforts were: the completion of a previously existing effort to relocate and monument the United States Public Land Survey (USPLS) corners within Milwaukee County; the completion of a previously existing effort to provide a survey control network for Milwaukee County, utilizing the monumented USPLS

corners as stations within this network; a digital topographic mapping program utilizing the completed survey control network for locating these maps accurately to both the surface of the earth and to an appropriate map projection; and a digital real property boundary line map compilation program, these maps constructed as overlays to the digital topographic maps, and, therefore, linked both to the surface of the earth and to the chosen map projection.

In discussing these four initial work efforts, Mr. Patterson stressed the interrelated nature of these individual tasks and the importance of each to the development of a scientifically sound collection of maps and their contribution to the creation of county, municipal, and private utility digital land information systems and public works infrastructure management systems.

The Subcommittee then began, but did not complete, a review and discussion of the proposed MCAMLIS Digital Topographic Replacement Mapping Program as that program had been previously presented to the MCAMLIS Steering Committee at its meeting held on July 20, 2004.

The second meeting of the Subcommittee on Topographic Mapping was held on September 2, 2004, also in Room 203P of the Milwaukee County Courthouse. Subcommittee member present were: Mr. Bate, Mr. High, Mr. Norris, Mr. Shaw, and Mr. Thur.

Others present were: Mr. Thomas D. Patterson, MCAMLIS Project Manager; and Mr. Kevin R. White, GIS Supervisor, Architectural and Engineering Services, Department of Parks and Public Infrastructure, Milwaukee County.

The Subcommittee completed its review and discussion of the proposed MCAMLIS Digital Topographic Replacement Mapping Program memorandum. The Subcommittee also reviewed and discussed the proposed specifications for digital topographic mapping that have provided the basis for the two most recently completed MCAMLIS digital topographic mapping projects. These specifications were intended by project staff for use in the previously identified MCAMLIS Digital Topographic Replacement Mapping Program.

The third meeting of the Subcommittee on Topographic Mapping was held on October 19, 2004, in Room 219 of the Milwaukee County – City Campus Building. Subcommittee members present were Mr. Bate, Mr. High, Mr. Shaw, Mr. Thur, Mr. Tym, and Mr. Vraga. Subcommittee members absent were: Ms. Bails and Mr. Norris.

Others present were: Mr. Robert P. Biebel, Chief Environmental Planner, SEWRPC; Mr. Thomas D. Patterson, MCAMLIS Project Manager; and Mr. Kevin R. White, GIS Supervisor, Architectural and Engineering Services Department of Parks and Public Infrastructure – Milwaukee County.

The Subcommittee evaluated the three specific items referred to it by the MCAMLIS Steering Committee as noted above, specifically in light of the manner in which the digital topographic maps were typically used in municipal engineering and planning and in environmental engineering and planning applications.

## COMMENTS AND RECOMMENDATIONS

On the basis of the review and discussion of the above identified material and after deliberating on the intent and perceived utility of the proposed digital topographic replacement mapping program, this Subcommittee offers the following comments, observations, and recommendations to the MCAMLIS Steering Committee.



### **The Utility of the Presently Available MCAMLIS Digital Topographic Mapping Products for their Intended Audience**

- The Subcommittee believes that the presently available MCAMLIS digital topographic mapping products do have value for their intended audience, although they did express concern that, with the audience being rather broad, this utility was difficult for the Subcommittee to completely assess.
- The Subcommittee believes that the more current the information contained on the digital topographic maps, the more value the maps have for their intended audience.
- The Subcommittee recommends that the Steering Committee consider the inclusion of six-inch pixel, color, digital orthophotography as one of the products to be obtained from the MCAMLIS digital topographic mapping projects, noting in particular that the digital terrain model needed to orthorectify the photographic images is already included in the MCAMLIS digital topographic mapping specifications. The Subcommittee believes that the inclusion of a digital orthophotography product as a part of the total digital topographic mapping preparation would increase the utility of any remapping efforts.
- The Subcommittee recommends that the digital map feature content currently contained in the specifications be reviewed to determine if all features currently mapped as digital vectors are needed, particularly if the Steering Committee should decide to incorporate digital orthophotography as a component of the product specifications. The Subcommittee further recommends that the Steering Committee consider appointing an additional Subcommittee or working group to provide guidance to the Steering Committee with respect to those map features which should be represented as digital line work and those features for which the digital orthophotography can be substituted.
  - At the third meeting of the Subcommittee, members reviewed the currently specified digital map feature content. Upon completion of this review and following extensive discussion concerning the importance of the various mapped features for specific uses and applications, the Subcommittee identified the following features for possible removal from the specifications:
    1. Recreational trail lines and associated text;
    2. Power, telephone and light pole locations;
    3. Railway signals;
    4. Signs – formerly billboards – and associated text;
    5. “Miscellaneous” special planimetric features and associated text. These features occur rarely, are often ephemeral, and include such features as spoil piles, and salt and coal storage piles.

### **The Conformance of the Substantive Map Feature Specifications, the Digital Map File Structure Specifications, and the Digital Operating Environment Specifications to State-of-the-Art Practices**

- The Subcommittee believes that the current map accuracy specifications meet all needs for the preparation of the MCAMLIS digital mapping products and recommends that the use of these map accuracy specifications be continued.

- The Subcommittee recommends that the current U.S. Public Land Survey one-quarter section "map sheet" focused delivery of the digital topographic mapping contained in the current specifications be revised to provide for delivery of the digital topographic mapping as a "seamless map" product. The Subcommittee further recommends that all current requirements relating to the preparation of "map sheets" and the delivery of "hard copy" maps be deleted from the current specifications.
- The Subcommittee recommends that that portion of the current specifications requiring delivery of the map products in Intergraph/MicroStation DGN format be reviewed, particularly in view of emerging computer software operating environments incorporating geodatabases. The Subcommittee further recommends that this review also carefully consider the translatability to other digital environments of whatever digital operating environment specifications are eventually settled upon by the Steering Committee. The Subcommittee recommends that the Steering Committee consider appointing an additional Subcommittee or working group to provide guidance to the Steering Committee with respect to adopting an alternative operating environment for inclusion in the specifications.
  - At the third meeting of the Subcommittee, members agreed that the use of the Intergraph/MicroStation DGN format for the delivery of the MCAMLIS digital topographic maps continued to be warranted. This recommendation was made after consideration of the fact that the MCAMLIS digital topographic maps are used in both GIS and CAD (Computer Aided Drafting) applications. Intergraph/MicroStation DGN format can be translated into common alternative software formats used in each of these two environments in relatively straight-forward and simple manners.

#### **The Need for a Replacement Digital Topographic Mapping Program**

- The Subcommittee recommends that the MCAMLIS Steering Committee undertake a Digital Topographic Mapping Replacement Program.
- The Subcommittee further recommends that the Steering Committee evaluate the useful life of the topographic mapping and adopt a suitable map replacement cycle for future annual work programs.
  - At the third meeting of the Subcommittee, members were again unable to reach consensus concerning a useful life cycle for the topographic mapping; other than to agree that such a life cycle lies in the range between 4 to 10 years. This means that most, if not all, Milwaukee County topographic maps now warrant replacement.
- Finally, the Subcommittee recommends that a digital topographic map replacement program be undertaken now utilizing the existing MCAMLIS specifications with the minor aforementioned recommended amendments.



- Layers to next month  
- Review & commitment 4B

## Milwaukee County Assessment & Database Design Project:

### Final Presentation

MCAMLIS Committee Meeting  
November 2, 2004

presented by  
Peter Thum, President  
Scott Stocking, System Analyst

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### Agenda

- › Project Purpose
- › Geodatabase Design Process and Products
- › Key Recommendations
  - Technical
  - Organizational
  - Migration Strategy
    - Scheduling/Budget



## Project Purpose



## Overall Goal of the Project

Develop a set specifications and strategies that may be used to  
develop seamless countywide cadastral, street centerline  
and street address Geodatabases

and...

Define a supporting organizational and technical framework  
within which the County can effectively maintain, manage,  
and use this new environment.



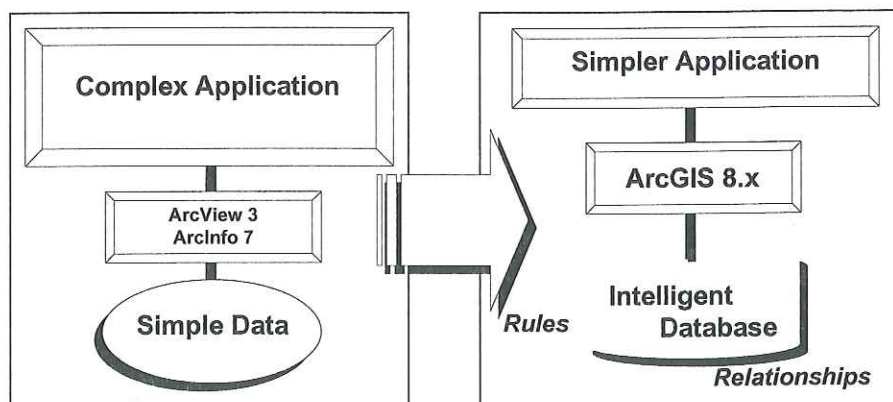


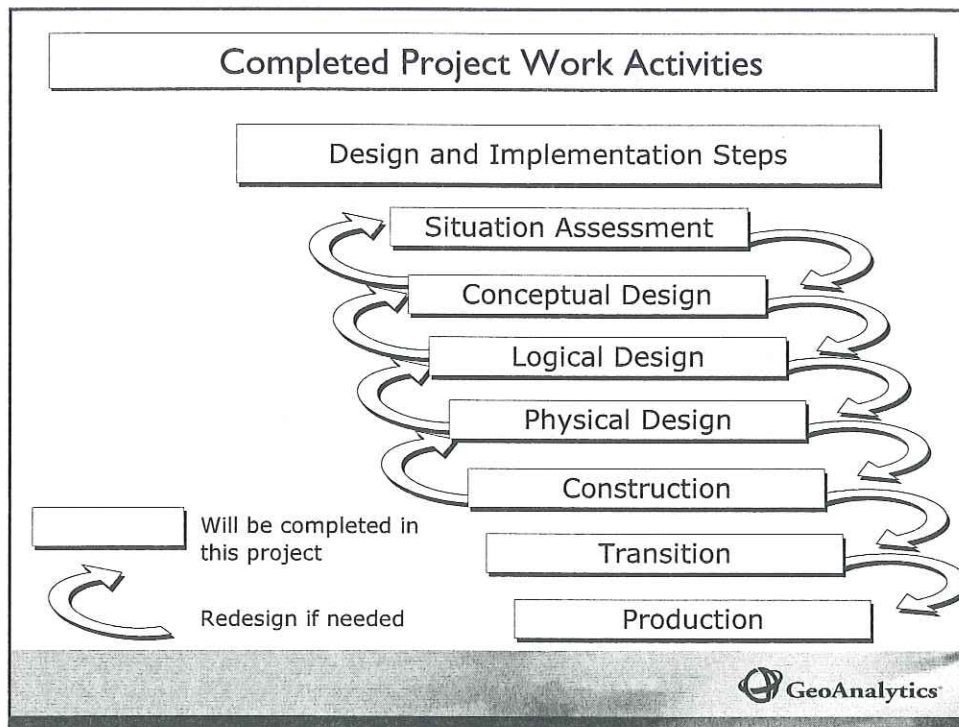
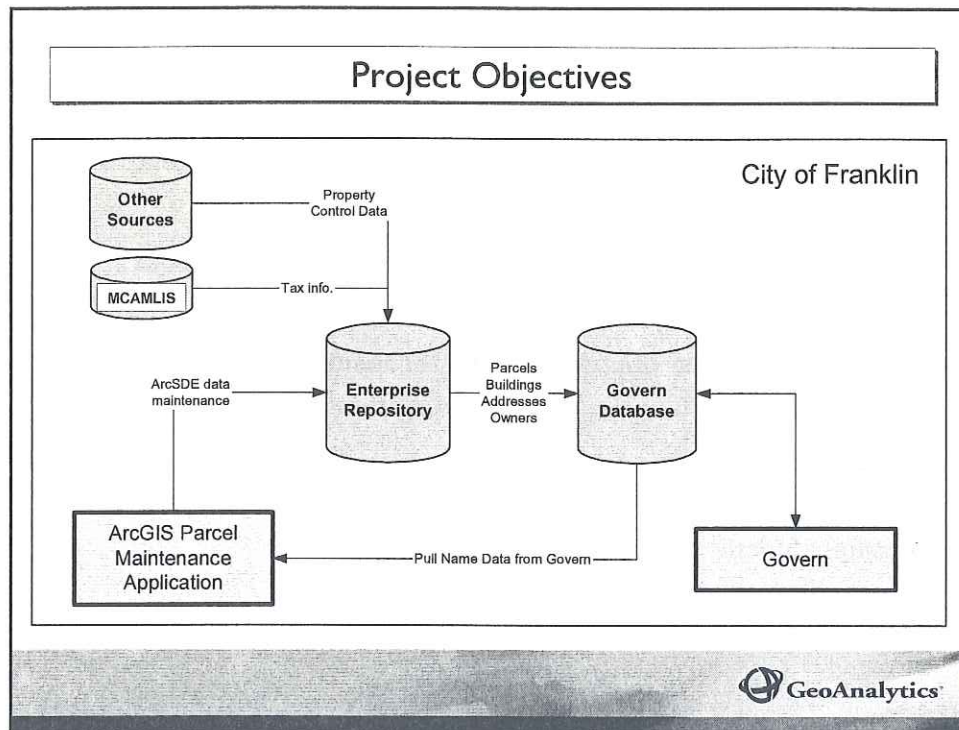
### Project Objectives

- Provide rich, complete and comprehensive GIS data content to end users;
- Enhance the future development of traditional GIS as well as other spatially-enabled business applications;
- Position for better integration and interoperability between non-GIS and GIS County information systems;
- Provide for flexibility, extensibility, and scalability to support internal departments, external partners, and their varied business functions.



### Project Objectives







### Assessment – Key Findings

- Limited, current use of GIS data by County departments
  - Yet, significant interest throughout County to use GIS to improve decision-making and operational efficiency
- Need for process improvement, especially in the ROD office and in terms of coordination with municipal partners
- Need for more integration between MCAMLIS-funded mapping specialist function and ROD office operations and products
- Compatibility challenges between County and municipal partners due to different GIS database designs



### Assessment – Key Findings

- Quality of GIS data can be improved with respect to completeness and currency
  - Gain wider acceptance and use by County departments and regional partners
- Need for stronger operational intergovernmental relations in terms of GIS data creation, maintenance, and use
- More County participation in countywide GIS operations and governance



## Geodatabase Design Process



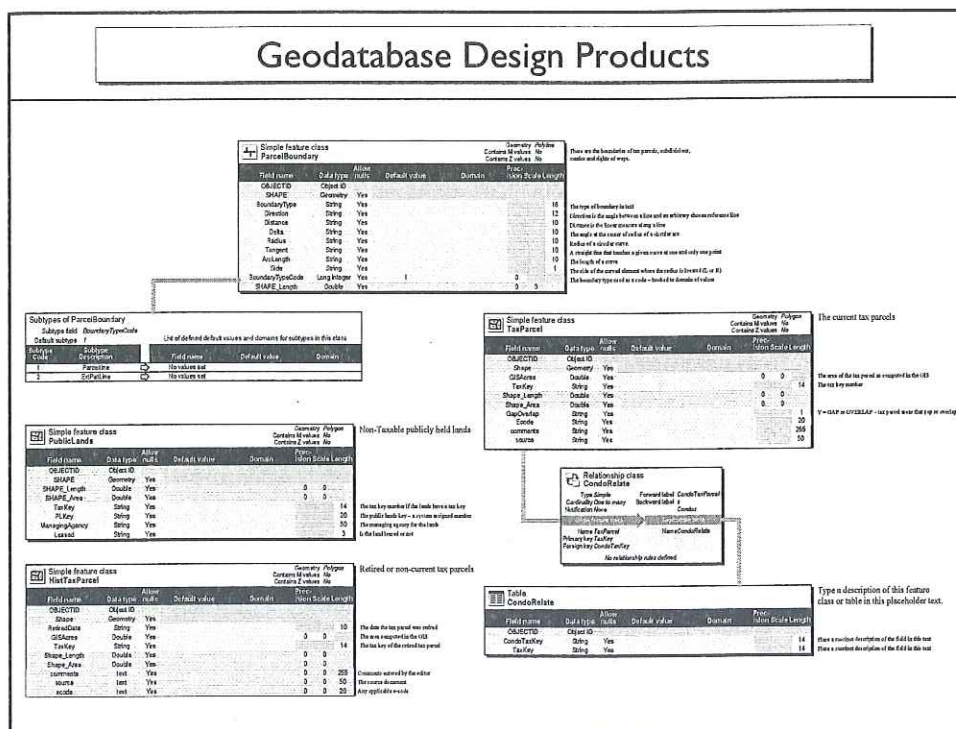
## Geodatabase Design Process

- Reviewed existing and future data requirements – with the County and regional partners
- Developed database designs that are simple to meet today's needs, but can be expanded as user requirements grow
  - Developed prototype Geodatabases
  - Solicited external partner review and comment
- Provided staff guidance on improving Geodatabase quality and maintenance processes





## Geodatabase Design Products



## Example Geodatabase Design Decisions

- Provided for logical grouping of cadastral, street centerline, and address GIS data into Geodatabase feature sets and classes
  - Included all cartographic features currently stored in ArcInfo coverage format
- Developed topology rules to enforce data integrity during future maintenance
- Provided for routing support in street centerline data set (City of Milwaukee reqs)
- Support for condo parcels (1 to many)





### Key Recommendations - Technical

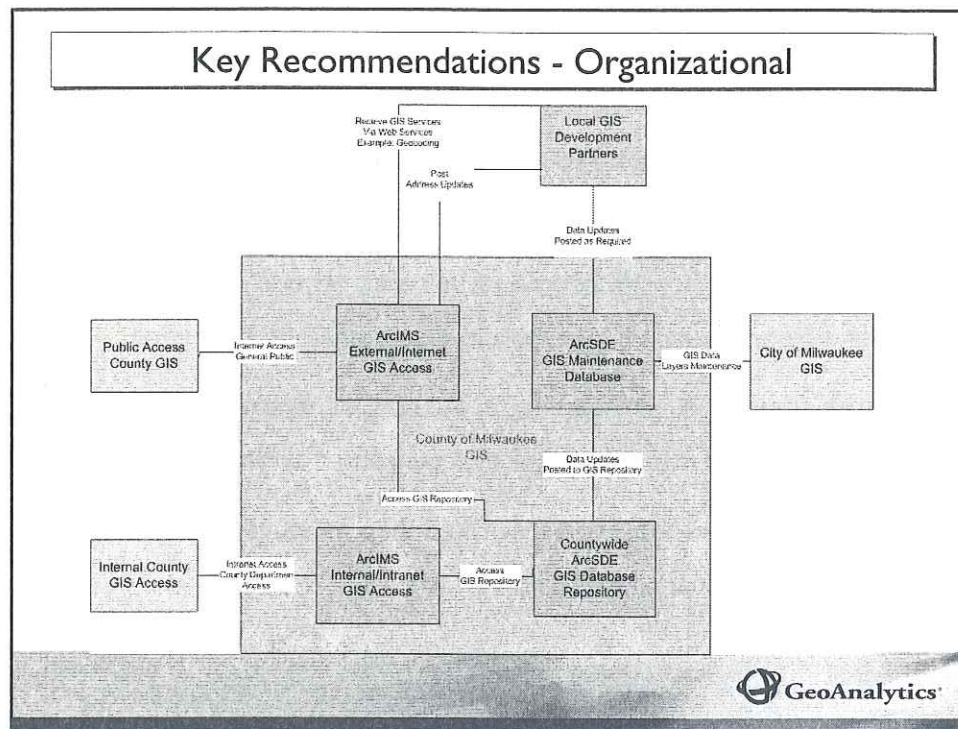
- › Create more formal data repository using ESRI ArcSDE to facilitate GIS data maintenance and publication
- › Leverage County ArcIMS license to increase general access to all GIS data by providing web-based display, query, and reporting
- › Develop operational agreements between County and regional partners to define data producer and consumer arrangements
- › Provide automated tools to allow rapid map production, and to assist data maintenance work flows



### Key Recommendations - Organizational

- › Formalize County directed GIS Program Governance Structure
- › Formalize GIS Operational Structure
- › Strengthen staff support
- › Develop data sharing arrangements with the ROD and other regional partners to facilitate data maintenance/quality efforts





### Key Recommendations – System Migration

- Incorporate provisions to insure data quality as the GIS layers are moved into the new data model
- County manage but outsource the data migration process
- Convert County GIS data to the Geodatabase model first to allow for the shorting out of City and County roles and responsibilities



### Migration Scheduling/Budget

- Identified staffing requirements required to support the data migration effort and advance the GIS to a true enterprise system
- Provided a systematic method to provide the most efficient migration of existing and new data layers
- Identified the resources needed from both a budgetary and staffing requirements necessary to complete the work



### Migration Scheduling

Task Name	2004				2005				2006					
	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	
<b>Year 2004 Work Efforts</b>														
County Cadastral Geodatabase Migration														
County Street Address Geodatabase Migration														
County Annotation Conversion to Geodatabase														
<b>Year 2005 Work Efforts</b>														
ArcGIS Training for County Staff														
County Land Records Map Series														
Geodatabase Maintenance Support System														
City of Milwaukee Cadastral Geodatabase														
<b>Year 2006 Work Efforts</b>														
City of Milwaukee Street Address Geodatabase														
ArcIMS Application Enhancements														
Development of Countywide Geocoding Services														



Activity	Quarter	Cost Range	
<b>FY2004 IMPLEMENTATION ACTIVITIES:</b>		Low	High
County Cadastral Geodatabase Migration	Q4/2004 Q3/2005	\$148,000	\$231,000
County Street Address Geodatabase Migration	Q4/2004Q4/2005	\$57,500	\$95,000
County Annotation Conversion to Geodatabase	Q4/2004 Q3/2005	\$10,000	\$20,000
<b>FY2004 TOTAL:</b>		<b>\$215,500</b>	<b>\$346,000</b>
<b>FY2005 IMPLEMENTATION ACTIVITIES:</b>		Low	High
ArcGIS Training for County Staff	Q1 - Q4	\$5,000	\$10,000
County Land Records Map Series	Q1 - Q3	\$13,500	\$18,500
Geodatabase Maintenance Support System	Q2 - Q3	\$30,500	\$52,500
City of Milwaukee Cadastral Conversion to Geodatabase	Q2/2005Q3/2006	\$93,500	\$125,500
<b>FY2005 TOTAL:</b>		<b>\$142,500</b>	<b>\$206,500</b>
<b>FY2006 IMPLEMENTATION ACTIVITIES:</b>		Low	High
City of Milwaukee Street Address Conversion to Geodatabase	Q1 - Q4	\$55,000	\$88,000
ArcIMS Application Enhancements	Q2 - Q4	\$8,000	\$12,000
Development of Countywide Geocoding Services	Q4	\$8,000	\$12,000
<b>FY2006 TOTAL:</b>		<b>\$71,000</b>	<b>\$112,000</b>
<b>TOTAL 2004-2006:</b>		<b>\$429,000</b>	<b>\$664,500</b>





2005 BUDGET

ORG UNIT

DATE

1923 &amp; 5080

10-28-04

By Supervisor Holloway

To amend the County Executive's 2005 Recommended Budget for Org. No. 1923 – Milwaukee County Automated Land Information System (MCAMLIS), and Org. No. 5080 - Department of Parks and Public Infrastructure – Architectural, Engineering and Environmental Services (A&E), by adding narrative language relating to MCAMLIS project management.

In the MCAMLIS narrative on page 1923 – 3, revise as follows:

- Beginning in 2005, the Architectural and Engineering (A&E) Division of the Department of Parks and Public Infrastructure will assume the project management function for MCAMLIS from the Southeastern Wisconsin Regional Planning Commission (SEWRPC). A&E will receive \$206,589 in existing MCAMLIS funds for project management. This includes conceptual development of individual projects, development of project specifications, writing contracts, preparation of invoices to draw down funds as expended, payment of subcontractors, recordkeeping and general maintenance of MCAMLIS data holding. In addition, this effort will merge the County's internal GIS functions with MCAMLIS. The MCAMLIS project will be managed in accordance with Milwaukee County procurement and contracting policies and ordinances. Additionally, Corporation Counsel will review the MCAMLIS Cooperative Agreement, authorized in 1990, to assure that the authority granted to the MCAMLIS Steering Committee is consistent with Milwaukee County interests, policies and ordinances, and will recommend changes to the agreement to the Committee on Judiciary, Safety and General Services by March 1, 2005.

In the A&E narrative on page 5080 – 6, revise as follows:

- Beginning in 2005, A & E GIS staff will take over the project management function of the Milwaukee County Automated Mapping and Land Information Program (MCAMLIS) from SEWRPC. A & E will receive \$206,589 for MCAMLIS project management. This includes conceptual development of individual projects, development of project specifications, writing contracts, preparation of invoices to





draw down funds as expended, payment of subcontractors, recordkeeping, and general maintenance of MCAMLIS data holding. In addition, this effort will merge the County's Internal GIS functions with MCAMLIS. The MCAMLIS project will be managed in accordance with Milwaukee County procurement and contracting policies and ordinances. Additionally, Corporation Counsel will review the MCAMLIS Cooperative Agreement, authorized in 1990, to assure that the authority granted to the MCAMLIS Steering Committee is consistent with Milwaukee County interests, policies and ordinances, and will recommend changes to the agreement to the Committee on Judiciary, Safety and General Services by March 1, 2005.

Addition of this language has no tax levy impact.

Org. No.	Department (or Capital Project)	Expenditure	Revenue (or Bonds)	Tax Levy
1923	MCAMLIS	\$0	\$0	\$0
5080	DPPI – A&E	\$0	\$0	\$0
TOTALS:		\$0	\$0	\$0

FINANCE AND AUDIT COMMITTEE ROLL CALL		
	AYES	NOES
Nyklewicz		
McCue	1	
Coggs-Jones		
Quindel	1	
Mayo	1	
Johnson	1	
Broderick	1	
Chair	1	
TOTALS:	6	0

Approve as amend: 6-0

